

CONTRACT DOCUMENTS
and
TECHNICAL SPECIFICATIONS

for

MEADOWBROOK SCHOOL
DEMOLITION

August 2015



City of
Norfolk

Department of Public Works

**7th Floor, City Hall Building
Norfolk, Virginia 23510
(757) 664-4631**

**CITY OF NORFOLK
MEADOWBROOK SCHOOL DEMOLITION
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Posted: August 21, 2015

**INVITATION FOR BIDS
CITY OF NORFOLK - DEPARTMENT OF PUBLIC WORKS**

PROJECT: MEADOWBROOK SCHOOL DEMOLITION

Owner: City of Norfolk
Department of Public Works
Room 700, 7th floor, City Hall Building
810 Union Street, Norfolk, VA 23510
Contact: Oliver Love
Tel: (757) 664-4635 / Fax: (757) 664-4603

A&E: Waller, Todd & Sadler Architects, Inc.
1909 Cypress Avenue
Virginia Beach, VA 23451
Contact: John L. Hodges, AIA
Tel: (757) 417-0140

Sealed bids are to be received in City of Norfolk Public Works Department, Attn: Contracts Office, Room 700, 7th floor, City Hall Building, 810 Union Street, Norfolk, VA 23510 until **3:30 p.m., Thursday, September 10, 2015**, for the above titled Project. **A Pre-Bid Conference will be held at 9:00 a.m., Monday, August 31, 2015 at the site, 7620 Shirland Avenue. Interested parties shall meet in the parking lot between the school and play field off of W. Little Creek Rd. The conference is non-mandatory but highly encouraged.**

The Work under this project consists of the demolition of the existing Meadowbrook School and adjacent site appurtenances. Existing utility service to the building shall be removed to property line and capped off and/or abandoned. Resultant site shall be fine graded, seeded and lawn established.

Bidding Documents are available from the Department of Public Works, provided on a CD, upon non-refundable payment of **\$5.00 per set** in the form of a check made payable to Treasurer, City of Norfolk. Cash payments will not be accepted.

A copy of the Bidding Documents will be on file and open to inspection at The Builders and Contractors Exchange, Inc., Norfolk, VA (757-858-0680), The Builders and Contractors Exchange, Inc., Richmond, VA (804-353-8640), McGraw-Hill Construction-Dodge, Richmond, VA (804-343-2701), Reed Construction Data, Norcross, GA (800-467-2860), Valley Construction News, Richmond, VA (804-674-0397), and Hispanic Contractors Association-Carolinas, Columbia, SC (877-227-1680 ext. 8054).

A Bid Bond, certified check, or cashier's check made payable to the Treasurer, City of Norfolk, for 5% of total bid must accompany each bid. State Contractor registration class and number is required on the outside of the envelope. State Contractor registration class and number is required on the outside of the envelope. The City reserves the right to cancel the bid opening or to reject any or all bids in whole or part, when it is in the best interest of the City. The right to waive informalities and to determine responsiveness of any bid and responsibility of all bidders is reserved to the City. Withdrawal of bids will be in accordance with Section 33.1-42.1 of the Norfolk City Code and Section 11-54 of The Code of Virginia, 1950 (as amended).

David L. Ricks, P.E.
Director

The Virginian Pilot – August 23, 2015
DemandStar – August 23, 2015

INSTRUCTIONS TO BIDDERS

1. AUTHORIZATION TO TRANSACT BUSINESS IN THE COMMONWEALTH

- (a) Bidder or offeror organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50 to include in its bid or proposal the identification number issued to it by the State Corporation Commission.
- (b) Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law shall include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized.

2. SUBMISSION OF BIDS

- (a) Make all bids on "Bid Form" and seal in opaque envelope. The name of project, the contractor's name, address, and Virginia Contractor Registration Class and Number shall be placed on the outside of the envelope.
- (b) If a contract is for \$120,000.00 or more, or if the total value of all such construction, removal, repair, or improvements undertaken by the bidder within any 12 month period is for \$750,000.00 or more, the bidder is required under Title 54, Chapter 11, Code of Virginia, 1950 (as amended), to show evidence of being licensed as a Class A Contractor. If a contract is \$7,500.00 or more, but less than \$120,000.00, or if the total value of all such construction, removal, repair or improvements undertaken by the bidder within any 12 month period is less than \$150,000, the bidder is required to show evidence of being licensed as a Class B Contractor. If a contract is \$1,000 or more, but less than \$7,500, or if the total value of all such construction, removal, repair or improvements undertaken by the bidder within any 12 month period is less than \$150,000, the bidder is required to show evidence of being licensed as a Class C Contractor. The bidder shall place on the bid above its signature its Virginia Contractor Registration Class and Number. If a contract is less than \$1,000.00, licensure is not required under Title 54, Chapter 11, Code of Virginia, 1950 (as amended).
- (c) If bids are submitted by mail, enclose the above noted envelope in a second sealed, opaque envelope and address to: **City of Norfolk, Department of Public Works, Attn: Contracts Office, Room 700, 7th floor, City Hall Building, 810 Union St., Norfolk, VA 23510.** Bids submitted by mail must be received at the above address before the time designated for bid opening.
- (d) Fully fill in all blanks in ink or typewritten, and state numbers in both writing and figures. Signatures shall be in longhand with name and title printed below. Bidders shall acknowledge all addenda in spaces provided on the bid form. For unit price contracts, in the event of a discrepancy between the Total Base Bid and the total of the extension of unit prices, the total extension of unit prices governs in determining the bid amount. For unit price contracts, in the event of a discrepancy between the extension of unit prices and the unit prices, the unit prices governs in determining the bid amount.
- (e) Interlineations, alterations, and irregularities of any kind may be cause for rejection of the bid. Erasures or any physical changes on the form shall be initialed by the Bidder.
- (f) Bidders may withdraw a bid after it has been submitted to the City any time prior to the stipulated time for opening such bids. Withdrawal of bids will be in accordance with Section 33.1-42.1 of the Norfolk City Code and Section 2.2-4330 of the Code of Virginia, 1950 (as amended).

3. EXAMINATION OF SITE

The bidder shall be responsible for having ascertained all pertinent local and existing conditions determinable by inspection and inquiry both on the site and adjacent thereto, including any other work being performed

thereon, and shall include in its bid all cost attendant upon problems arising from said conditions existing at the time of submission of its bid.

Reference is made to the Contract Documents for information relating to reports, explorations, underground facilities, and easements. On request, the owner will provide each Bidder access to the site to conduct such examinations, investigations, explorations, tests and studies as each Bidder deems necessary for submission of a Bid. The Bidder must fill all holes, clean up, and restore the site to its former condition upon completion of such explorations, investigations, tests and studies, and hold the Owner harmless from any damage to property or injury to persons resulting from or arising out of such explorations, investigations, tests, and studies.

4. INQUIRIES, INTERPRETATION AND ADDENDA

Should a bidder find discrepancies in, or omissions from, the drawings or documents, or should it be in doubt as to their meaning, it should at once notify the Owner in writing. The Owner will welcome such inquiries and they will be given consideration. Every interpretation made by the Owner will be in the form of a printed addendum which will be on file in the office of the Owner. Addenda will be sent to each bidder, but it will be the bidder's responsibility to know of, examine and become familiar with all addenda issued. All addenda shall become a part of the Contract Documents. The Owner will not be responsible for any oral instruction.

The submission of a Bid will constitute inconvertible representation by the Bidder that the Bidder has complied with every requirement of this Section, that without exception, the Bid is premised upon the agreement by the Bidder to perform the Work required by the Contract Documents, and applying specific means, methods, techniques, sequence or procedures of construction (if any) that may be shown or indicated or expressly required by the Contract Documents, that the Bidder has given Written Notice to the Owner of all conflicts, errors, ambiguities, and discrepancies that the Bidder has discovered in the Contract Documents and the written resolutions thereof by the Owner is acceptable to the Bidder, and that the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions of performance and furnishing the Work.

The last day to submit RFI's for this project is 5:00 p.m., Friday, September 4, 2015.

5. BID GUARANTEE

Bids shall be accompanied by a bid guarantee of five percent (5%) of the amount of the total bid including all additive alternates, if any, and may be a certified check or cashier's check or a Bid Bond, made payable to: **Treasurer, City of Norfolk**. Such bid bond or check shall be submitted with the understanding that it shall guarantee that the bidder will not withdraw its bid during the period of sixty (60) days following the opening of bids; that if its bid is accepted, it will enter into a Contract with the Owner in accordance with a form of agreement acceptable to and approved by the Owner and that the required Performance and Payment Bonds will be given; and that in the event of the withdrawal of said bid within said period, or failure to enter into said contract and given said bonds within ten (10) days after it has received notice of acceptance of its bid, the bidder shall be liable to the Owner for the full amount of the bid guarantee as representing the damage to the Owner on account of the default of the bidder in any particular thereof. The bid bonds and checks will be returned to the bidders after the Owner and the lowest, responsive, responsible bidder have executed a contract. If the required contract has not been executed within sixty (60) days after the date of the opening of the bids, then the bond or check of any bidder will be returned upon its request, provided it has not been notified of the acceptance of its bid prior to the date of such request.

6. PERFORMANCE AND PAYMENT BOND

The Contractor shall furnish a performance bond and a labor and material payment bond each in the amount of 100% of the contract price. Said bonds shall be delivered to the Owner (in duplicate) and shall be approved by

the Owner prior to the execution of a construction contract between the Contractor and the Owner. Bonds shall be City of Norfolk standard form and shall be in accordance with Section 33.1-76 of the Norfolk City Code. All costs of bonds shall be paid by the Contractor. A bond rider will be required should change orders increase the amount of the contract by \$100,000 or more.

7. NEGOTIATIONS WITH APPARENT LOW BIDDER

The City reserves the right to negotiate with the lowest, responsive, responsible bidder if the bid exceeds available funds. Negotiations may include reduction in bid price, modification and/or reduction in scope of the work, substitution of materials, or any other alterations to the work so that the low bid is reduced to within available funds including a reasonable fund balance for contingency funds to be available during the course of construction.

8. TIME OF COMPLETION

- (a) Time is of the essence. All work shall be completed within **One Hundred Twenty (120)** calendar days from the Notice to Proceed. Work shall commence within (10) ten days from date of Notice to Proceed.
- (b) Work shall not commence until the Contractor has received a fully executed copy of the Contract which authorizes the Work and has also received a Notice to Proceed issued by the authorized City representative. Work commenced prior to receipt of both a fully executed copy of the Contract and a written Notice to Proceed from an authorized City official shall be deemed unauthorized and such work will progress solely at Contractor's risk.

9. NON-DISCRIMINATION CLAUSE

The Contractor agrees to comply, and to require all suppliers and subcontractors paid in whole or in part from funds made available under this contract to comply with Section 122(a)(1) of the State and Local Fiscal Assistance Act of 1972 (P. L. 92-512), as amended, to wit:

"No person in the United States shall, on the grounds of race, color, national origin, or sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity of a State government or unit of local government, which government or unit receives funds made available under Subtitle A (of Title I of the Act.)

Any prohibition against discrimination on the basis of age under the Age Discrimination Act of 1975 or with respect to an otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973 shall also apply to any such program or activity.

Any prohibition against discrimination on the basis of religion, or any exemption from such prohibition, as provided in the Civil Rights Act of 1964 or Title VIII of the Act of April 11, 1968, hereafter referred to as the Civil Rights Act of 1968, shall also apply to any such program or activity."

Further, the Contractor agrees to comply with Section 33.1-53 of the Code of the City of Norfolk, Virginia 1979, as amended, regarding prohibited employment discrimination.

10. MINORITY BUSINESS CLAUSE

It is the policy of the City of Norfolk to facilitate the establishment, preservation, and strengthening of small businesses and businesses owned by women and minorities and to encourage their participation in the City's procurement activities. Toward that end, the City encourages these firms to compete and encourages non-minority firms to provide for the participation of small businesses and businesses owned by women and

minorities through partnerships, joint ventures, subcontracts, and other contractual opportunities. Bidders (offerors) are asked, as part of their submission, to describe any planned use of such businesses in fulfilling this contract.

11. NON-COLLUSION AFFIDAVIT

(a) Every bidder, by submitting a bid, shall be deemed to covenant, with regard to said bid, as follows:

- (1) that said bid was arrived at independently without collusion, consultation, communication, or agreement for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor.
- (2) that, unless otherwise required by law, the prices which have been quoted in the bid submitted have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor.
- (3) that no attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

A bid shall not be considered for award nor shall any award be made where the bidder shall have failed to comply with a(1), a(2), or a(3) above.

(b) Every bidder, in addition to making the above covenants (a)(1), (a)(2) and (a)(3) will be required to provide the City of Norfolk, with the bid submitted, the affidavit contained herein.

(c) Every bidder will be required to disclose, with the submitted bid, the following information:

- (1) the correct mailing address of the bidder.
 - (2) if a corporation, the name and current mailing address of the President, the Secretary and the Treasurer of the corporation.
 - (3) if a partnership, proprietorship or other firm, the name and current mailing address of each partner, proprietor or member of said firm.
 - (4) whether or not the bidder is associated with; owns, in whole or in part; or is owned, in whole or in part, or is a subsidiary of, any other bidder.
- (d) The fact that a bidder (1) has published price lists, rates or tariffs covering items included in the submitted bid; (2) has informed prospective customers of proposed or pending publication of new or revised price lists for such items; or (3) has sold the same items to other customers at the same prices being bid, does not constitute a disclosure within the meaning of Subparagraph 9(a).
- (e) Any bid submitted by a corporate bidder shall be deemed to have been authorized by the Board of Directors of the bidder and such authorization shall be deemed to include the signing and submission of the bid and the execution of the affidavit required in (b) above as the acts and deeds of the corporation.

12. SUBSTANCE ABUSE AND DRUG-FREE WORK PLACE

The Contractor agrees to comply with Section 33.1-58 of the Code of the City of Norfolk, Virginia, 1996, as amended, regarding substance Abuse and Drug-Free Work Place Policy.

Bids to be opened: **3:30 p.m., Thursday
September 10, 2015**
Work to be Completed in: **120 calendar days**
Liquidated Damages: **\$500.00 per day**
Performance Bond: **100%**
Payment Bond: **100%**
Bid Bond: **5%**

BID FORM

To: City of Norfolk
Department of Public Works
810 Union Street, Room 700
Norfolk, Virginia 23510

A. LUMP SUM BID

In compliance with the Invitation for Bids and Instructions to Bidders, the General Conditions of the Contract, the contract drawings and specifications titled **MEADOWBROOK SCHOOL DEMOLITION** and all addenda issued to date, all of which are part of this bid, the undersigned hereby proposes to furnish all items, including materials, labor, and equipment called for by, and in strict accordance with Contract Documents for the sum of:

BASE BID:

\$ _____
(Use words)
Dollars (\$ _____)

ADD ALTERNATES

1. Existing Exterior Wall Demolition

\$ _____
(Use words)
Dollars (\$ _____)

TOTAL BID (BASE BID + ADD ALTERNATE)

\$ _____
(Use words)
Dollars (\$ _____)

Bid Award will be based upon the lowest responsive and responsible TOTAL BID (BASE BID + ADD ALTERNATE) regardless if the City elects to utilize the alternate or not.

B. **ADDENDA**

The undersigned acknowledges receipt of the following addenda:

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

We agree to enter into a contract with the City of Norfolk, Virginia within ten (10) days of the award of same to us for the price named in our bid.

It is expressly agreed by us that the City of Norfolk, Virginia shall have the right to reject any and all bids and to waive any informalities.

In default of the performance on our part of the conditions of bid, our failure to enter into a contract with the City of Norfolk, Virginia, within the time above set, we herewith furnish a certified check, cashier's check (or Bid Bond) in the amount of \$_____, which shall be forfeited as liquidated damages to the City of Norfolk, Virginia, but otherwise the said check or Bid Bond shall be returned.

We agree to begin work at any time after receipt of the Notice to Proceed from the Director of Public Works and complete all of the Work within **One Hundred Twenty (120) calendar days** from the Notice to Proceed.

C. **Norfolk Businesses**: It is the policy of the City to support Norfolk businesses and workforce development and it encourages companies with corporate offices in Norfolk and which employ Norfolk residents to compete for City contracts. Bidders are asked, as part of their submission, to advise of their Norfolk location and detail their employment of Norfolk residents.

D. **Equal Opportunity Business Development**: It is the policy of the City of Norfolk to facilitate the establishment, preservation, and strengthening of small businesses and businesses owned by women and minorities and to encourage their participation in the City's procurement activities. Toward that end, the City encourages these firms to compete and encourages non-minority firms to provide for the participation of small businesses and businesses owned by women and minorities through partnerships, joint ventures, subcontracts, and other contractual opportunities. Bidders (offerors) are asked, as part of their submission, to describe any planned use of such businesses.

1. Is your firm a minority owned business? Yes ___ No ___ If yes, please check the appropriate category: ___ African American (male), ___ African American (female), ___ Caucasian (female), ___ Hispanic (male), ___ Hispanic (female), ___ Asian American (male), ___ Asian American (female), ___ American Indian (male), ___ American Indian (female), ___ Eskimo (male), ___ Eskimo (female), ___ Aleut (male), ___ Aleut (female), ___ Other (male), ___ Other (female).

2. **Subcontracting Opportunities for Small, Women Owned, Minority Business Enterprises and**

Disabled Veterans. All prime contractors are requested to furnish the following information regarding participation of small, women owned, minority business enterprises and disabled veterans:

a. Proposed Name of your Subcontractor(s):

b. Proposed Minority Category of Subcontractor(s) - please check the appropriate category(ies):

<input type="checkbox"/> African American (male)	<input type="checkbox"/> African American (female)
<input type="checkbox"/> Hispanic (male)	<input type="checkbox"/> Hispanic (female)
<input type="checkbox"/> Asian American (male)	<input type="checkbox"/> Asian American (female)
<input type="checkbox"/> American Indian (male)	<input type="checkbox"/> American Indian (female)
<input type="checkbox"/> Eskimo (male)	<input type="checkbox"/> Eskimo (female)
<input type="checkbox"/> Aleut (male)	<input type="checkbox"/> Aleut (female)
<input type="checkbox"/> Other (male)	<input type="checkbox"/> Caucasian (female)
	<input type="checkbox"/> Other (female)

c. Proposed Amount of Subcontracts:

d. Proposed Description of commodity (i.e. masonry, hauling, insulation, etc.):

e. Proposed Description of Project:

f. Proposed Total value of awards to all subcontractors:

g. Proposed Total Number of minority subcontracts awarded:

h. If you do not propose the use of any subcontractors, please check here ____.

E. The undersigned has read all sections under "Instructions to Bidders."

F. **CONTRACTOR'S REGISTRATION AND SIGNATURE**

Registered Virginia Contractor Class and No. _____

City of Norfolk Business License No. _____

Contractor _____ Signed _____ (SEAL)

Date _____ Title _____

NOTE: If Bidder is a corporation, write state of incorporation under signature and if a partnership, give full names of all partners.

End of Page

AFFIDAVIT

City of Norfolk, Virginia project: **Meadowbrook School Demolition**

Bid Date: _____

STATE OF VIRGINIA

(City/County)

This day personally appeared before the undersigned, a Notary Public in and for the City/County and State aforesaid, _____, who having been first duly sworn

(name of owner, partner, president)

according to law, did depose and aver as follows:

(a) That he is _____
(owner, partner, president, etc.)

of _____
(insert name of contractor)

(b) That he is personally familiar with the bid of _____
(insert name of contractor)
submitted in connection with the above captioned City of Norfolk project.

(c) That said bid was formulated and submitted in good faith as the true bid of said bidder.

(d) That said bid in no manner violates the Sherman Antitrust Act (15 U.S.C. '1 *et seq.*), The Virginia Antitrust Act (§59.1-9.1 through §59.1-9.17 Code of Virginia, (1950), as amended) or the Conspiracy to Rig Bids to Government Act (§§59.1-68.8, Code of Virginia (1950), as amended).

And further this deponent saith not.

Affiant

Subscribed and sworn to before me this _____ day of _____, 20____.

My commission expires: _____, 20____

Notary Public

MAILING ADDRESS, FAX AND TELEPHONE NUMBER OF BIDDER:

IF CORPORATION, PROVIDE NAME AND MAILING ADDRESS AS REQUIRED BELOW

PRESIDENT

SECRETARY

TREASURER

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IF PARTNERSHIP, PROPRIETORSHIP, OR OTHER FIRM, PROVIDE NAME AND MAILING ADDRESS OF EACH PARTNER, PROPRIETOR, OR MEMBER OF FIRM.

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COMPLIANCE WITH STATE LAW

AUTHORIZATION TO TRANSACT BUSINESS IN THE COMMONWEALTH

I. **CERTIFICATION**

- A. The Bidder/Vendor (Please fill in with your enterprise's complete name)

certifies that it is organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50.

The identification number issued to Bidder/Vender by the State Corporation Commission: _____

- B. Bidder/Vendor that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law shall describe why it is not required to be so authorized:

Bidder/Vendor: _____

Signed: _____

Title: _____

Date: _____

II. **INSTRUCTIONS**

- a. The Bidder/Vendor shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Vendor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

- b. A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Bidder's/Vendor's responsibility. Failure of the Bidder/Vendor to furnish a certification or provide such additional information as requested by the appropriate City purchasing official may render the Bidder/Vendor non-responsible.
- c. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of a Bidder/Vendor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- d. The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Bidder/Vendor knowingly rendered an erroneous certification, in addition to other remedies available to the City, the appropriate City purchasing official may terminate the contract resulting from this solicitation for default.

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THE CITY OF NORFOLK, VIRGINIA

OFFICE OF THE CITY MANAGER

CONTRACT

THIS AGREEMENT, made as of the ____ day of _____ in the year **2015**, is between the **City of Norfolk, Virginia**, acting by and through the City Manager, hereinafter styled the **City**, and

party of the second part, hereinafter styled the **Contractor**.

WITNESSETH, That whereas the City has awarded to the Contractor, in accordance with his bid of **September 10, 2015** a contract for **MEADOWBROOK SCHOOL DEMOLITION** as described in specifications and drawings prepared therefor by **Waller, Todd & Sadler Architects, Inc., 1909 Cypress Avenue, Virginia Beach, Virginia 23451** hereinafter styled the Engineer, or by the City of Norfolk, and on file in the office of the Director of Public Works of the City of Norfolk, Virginia.

ARTICLE 1 - THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 2 - DATE OF COMMENCEMENT AND COMPLETION TIMES

The Contractor further agrees to begin Work at such a date as the Director, Department of Public Works, Norfolk, Virginia, shall notify it to begin via a Notice to Proceed letter, and that it will achieve Substantial Completion of the entire Work in accordance with Paragraph 9.8 of the General Conditions not later than **One Hundred Twenty (120) consecutive calendar days** from the date of commencement as well as achieve Final Completion in accordance with Paragraph 9.10 of the General Conditions not later than **Thirty (30) consecutive calendar days** from the date of Substantial Completion.

ARTICLE 3 - LIQUIDATED DAMAGES

The Contractor and the City recognize that time is of the essence of this Agreement. In view of the difficulty of ascertaining the loss which the City will suffer by reason of delay in the performance of the Work, the Contractor and the City hereby agree upon as the liquidated damages set below that the City will suffer by reason of delay and/or default, and not as a penalty. Further, the City shall deduct and retain the amount of such liquidated damages out of the moneys which may be due or become due to the Contractor under this Agreement.

Accordingly, should the Contractor fail to achieve Substantial Completion the aforesaid Work in accordance with the contract documents to the satisfaction and approval of the Engineer within the time stipulated in Article 2 above, the Contractor shall pay to the City of Norfolk, Virginia, **Five Hundred Dollars and Zero Cents (\$500.00)** for every calendar day beyond the time set for substantial

completion.

After Substantial Completion, if the Contractor shall neglect, refuse, or fail to complete the remaining Work within the contract time or any proper extension thereof granted by the City, the Contractor shall pay the City **Five Hundred Fifty Dollars and Zero Cents (\$500.00)** for every calendar day beyond the time set for final completion until the Work is completed and ready for final payment.

ARTICLE 4 - CONTRACT PRICE

The City shall pay the Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined below subject to additions and deductions as provided in the Contract Documents:

For all Work other than Unit Price Work, a lump sum of:

_____ Dollars and _____ Cents (\$_____)

All specific cash allowances are included in the above price and have been computed in accordance with Paragraph 3.8 of AIA A201-2007, General Conditions of the Contract for Construction (as modified).

ARTICLE 5 - PAYMENTS

Based upon applications for payment submitted to the Engineer by the Contractor and certificates for payment issued by the Engineer, the City shall make monthly progress payments on account of the contract sum to the Contractor as provided in the conditions of the contract as follows:

The City will pay the Contractor, on or about the thirtieth calendar day after receipt of a Request for Payment, ninety-five percent (95%) of the portion of the contract sum properly allocable to labor, materials, and equipment incorporated in the Work and ninety-five percent (95%) of the portion of the contract sum properly allocable to materials and equipment suitably stored at the site or at some other location agreed upon in writing by the parties, less the aggregate of previous payments in each case; provided, however, that the owner, at any time after fifty percent (50%) of the Work has been completed, if it finds that satisfactory progress is being made, may make any of the remaining partial payments in full; and upon final completion, a sum sufficient to increase the total payment to one-hundred percent (100%) of the contract sum, less such retainage as the Engineer shall determine for all incomplete Work and unsettled claims. But such full payment or payments shall in no manner be construed as reducing the amount of the bond, or the liability of the surety thereon, until final completion and acceptance of all items of Work herein set forth.

The action of the Engineer by which the Contractor is to be bound according to the terms of this contract shall be that evidenced by his final estimate and certificate, all prior estimates upon which ninety-five percent (95%) or more may be made, being merely payment on account, and not payments for accepted Work, and subject to the correction of such final estimate, which may be made with notice to the Contractor.

ARTICLE 6 - CONTRACTOR'S REPRESENTATION

To induce the City to enter into this Agreement, the Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents and other related data identified in the Bidding Documents.

B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all federal, state, and local laws and regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site which have been provided with the Contract Documents, and (2) reports and drawings of a hazardous environmental condition, if any, at the site, which have been provided with the Contract Documents.

E. Contractor has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work.

F. Contractor is aware of the general nature of Work to be performed by City and others at the Site that relates to the Work as indicated in the Contract Documents.

G. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor

H. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

I. Contractor hereby certifies that it has familiarized itself with Sections 33.1-86 through 33.1-93 of the Code of the City of Norfolk, Virginia, 1979, as amended, entitled "Ethics in Public Contracting," including the additional statutes set forth in Section 33.1-86 thereof, and further that all amounts received by the Contractor pursuant to this Agreement are proper and in accordance therewith.

J. Contractor hereby certifies that at all times during which any term of this Agreement is in effect, it does not and shall not knowingly employ any unauthorized alien. For purposes of this section, an "unauthorized alien" shall mean any alien who is neither lawfully admitted for permanent residence in the United States nor authorized to be employed by either Title 8, section 1324a of the United States Code or the U.S. Attorney General.

K. Contractor hereby represents that it is organized as a stock or non-stock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership and is authorized to transact business in the Commonwealth as a domestic or foreign business entity if so required by Title 13.1 or Title 50 or as otherwise required by law.

ARTICLE 7 - CONTRACT DOCUMENTS

The Contract Documents consist of the following:

- a. Invitation for Bids
- b. Instructions to Bidders
- c. Bid Form/Affidavit
- d. Bid Bond
- e. Contract
- f. Performance Bond
- g. Payment Bond
- h. AIA A201-2007, "General Conditions of the Contract for Construction" (as modified)
- i. Certificate of Insurance
- j. Notice of Award
- k. Notice to Proceed
- l. Change Orders (if any)
- m. Other Documents as may be required by law or appended hereto
- n. Plans and Drawings prepared by: **Waller, Todd & Sadler Architects, Inc., 1909 Cypress Avenue, Virginia Beach, Virginia 23451**
- o. Specifications prepared or issued by: **Waller, Todd & Sadler Architects, Inc., 1909 Cypress Avenue, Virginia Beach, Virginia 23451**
- p. Addendum (as listed in Bid Form)

Witness the following signatures and seals:

Witness:

_____ (SEAL)

SEAL if
Incorporated

Written Signature

Printed Signature

Title

Date

Virginia State Contractor's License No. _____

City of Norfolk Business License No. _____

Contents Approved:

Director of Public Works

Approved as to form and correctness:

Deputy City Attorney

CITY OF NORFOLK, VIRGINIA

By _____
City Manager

Attest: _____
City Clerk

I hereby certify that the money required for this contract (agreement, obligation or expenditure) is in the City Treasury to the credit of the fund from which it is to be drawn, and not appropriated for any other purpose.

Account: _____

Amount: _____

Contract No.: _____

Vendor Code: _____

Director of Finance

Date

End of Page

PERFORMANCE BOND

Bond No. _____
Amount: \$ _____

KNOW ALL PERSONS BY THESE PRESENTS, that _____ of _____ hereinafter called the Contractor and _____, a corporation duly organized and existing under and by virtue of the laws of the State of _____, hereinafter called the Surety, and authorized to transact business within the Commonwealth of Virginia as the Surety, are held and firmly bound unto the City of Norfolk as Owner, in the sum of _____ **Dollars and _____ Cents (\$_____)**, lawful money of the United States of America, for payment of which, well and truly be made to the Owner, the Contractor and the Surety bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents as follows:

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the Contractor has executed and entered into a certain Agreement, hereto attached, with the Owner dated _____, 2015 for

MEADOWBROOK SCHOOL DEMOLITION

NOW THEREFORE, if the Contractor, and its successors and assigns, shall at all times duly, promptly, and faithfully perform the Work and any alteration in or addition to the obligations of the Contractor arising thereunder, including the matter of infringement, if any, of patents or other proprietary rights, and shall assure all guarantees against defective workmanship and materials, including the guarantee period following final completion by the Contractor and final acceptance by the Owner and comply with all the covenants therein contained in the Specifications, Drawings, and other Contract Documents required to be performed by the Contractor, in the manner and within the times provided in the Agreement, and shall fully indemnify and save harmless the Owner from all costs and damage which it may suffer by reason or failure to do so, and shall fully reimburse and repay it all outlay and expenses which it may incur in making good any default, and reasonable counsel fees incurred in the prosecution of or defense of any action arising out of or in connection with any such default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that the Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract Documents or to the Work to be performed thereunder, or payment thereunder before the time required therein, or waiver of any provision thereof, or assignment, subletting or transfer thereof or any part thereof, shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration, addition to the terms of the Contract Documents or any such payment, waiver, assignment, subcontract or transfer.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

Whenever Contractor shall be declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the Owner shall have the right, at its option, to require the Surety to promptly proceed to remedy the default within 30 days of notice by proceeding or procuring others to proceed with completing the Agreement with its terms and conditions including the correction of any defective work and the provision of safety measures required as the result of such default; and all reserves, deferred payments, and other funds provided by the Agreement to be paid to Contractor shall be paid to Surety at the same times and under the same conditions as by the terms of that Agreement such fund would have been paid to Contractor had the Agreement been performed by Contractor; and Surety shall be entitled to such funds in preference to any

assignee of Principal of any adverse claimant. Notwithstanding the above, the Owner shall have the right, with the approval of the Surety which shall not be unreasonably withheld, to take over and assume completion of the Agreement and be promptly paid in cash by the Surety for the cost of such completion less the balance of the Contract price.

IN WITNESS WHEREOF, all above parties bounded together have executed this instrument this _____ day of _____, **2015**, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

(_____)

By: _____ (Seal)

Name: _____

Title: _____

Attest

SURETY

By: _____ (Seal)

Attest

APPROVED AS TO FORM: _____, 2015

City of Norfolk, OWNER

By: _____
Deputy City Attorney

NOTE: Date of Bond shall not be prior to the date of the Agreement. If the Contractor is a partnership, all partners shall execute the Bond.

IMPORTANT: The Surety named on this Bond shall be one who is licensed to conduct business in the Commonwealth of Virginia, and named in the current list of Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies, as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent shall be accompanied by a certified copy of the authority to act for the Surety at the time of signing of this Bond.

End of Page

PAYMENT BOND

Bond No. _____

Amount: \$ _____

KNOW ALL PERSONS BY THESE PRESENTS, that _____ of _____, hereinafter called the Contractor and _____, a corporation duly organized and existing under and by virtue of the laws of the State _____, hereinafter called the Surety, and authorized to transact business within the Commonwealth of Virginia as the Surety, are held and firmly bound unto the City of Norfolk as Owner, in the sum of _____ **Dollars and ____ Cents (\$_____)**, lawful money of the United States of America, for payment of which, well and truly be made to the Owner, the Contractor and the Surety bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents as follows:

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the Contractor has executed and entered into a certain Agreement, hereto attached, with the Owner dated _____, 2015 for

MEADOWBROOK SCHOOL DEMOLITION

NOW THEREFORE, if the Contractor shall promptly make payments to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the Work provided for in the Agreement, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, repairs on machinery, equipment, and tools consumed, used or rented in connection with the construction of the Work, and all insurance premiums on the Work, and for all labor performed in the Work, whether by Subcontractor or otherwise, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract Documents or to the Work to be performed thereunder, shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract Documents.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, all above parties bounded together have executed this instrument this ____ day of _____, **2015**, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

(_____)

By: _____ (Seal)

Name: _____

Title: _____

Attest

SURETY

By: _____ (Seal)

Attest

APPROVED AS TO FORM: _____, 2015

City of Norfolk, OWNER

By: _____
Deputy City Attorney

NOTE: Date of Bond shall not be prior to the date of the Agreement. If the Contractor is a partnership, all partners shall execute the Bond.

IMPORTANT: The Surety named on this Bond shall be one who is licensed to conduct business in the Commonwealth of Virginia, and named in the current list of Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies, as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent shall be accompanied by a certified copy of the authority to act for the Surety at the time of signing of this Bond.

End of Page



Document A201™ – 2007

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Meadowbrook School Demolition

THE CITY OF NORFOLK, a municipal corporation of the Commonwealth of Virginia,

hereinafter called the "City" or the OWNER:

(Name, legal status and address)

This document has important legal consequences.

Consultation with an attorney is encouraged with respect to its completion or modification.

THE ARCHITECT:

(Name, legal status and address)

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them ~~as being necessary to produce the indicated results, or from prevailing custom or trade usage as being required to produce the intended result whether or not specifically called for at no additional cost to the Owner.~~

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§ 1.2.1.1 Should any conflict be found in the Contract Documents, the Architect/Engineer shall interpret or construe the Contract Documents so as to secure the most substantial and complete performance of the Work. In other words, the better quality or great quantity of work shall be provided in accordance with the Architect/Engineer's interpretation. The Architect/Engineer's decision in this matter shall be final.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.2.4 Wherever in the Contract Documents the words "as approved", "as directed", "as required", "acceptable", "satisfactory" and words of like import are used with references to the Work or its performance, and without further qualification, it shall mean as approved, as directed, as required by the Architect/Engineer and acceptable, satisfactory, etc. to the Architect/Engineer.

§ 1.2.5 The general character of the detailed work is shown on the Drawings, but minor modifications may be made on the shop drawings or mock-ups. Any details shall be worked out in relation to their location and their connection to other parts of the Work. Where on any drawings a portion of the Work is drawn out and the remainder is indicated in outline, the parts drawn out also apply to all other like portions of the Work. Where details or conditions are indicated but started only, such details or conditions shall be continued throughout the courses or parts in which they occur and shall also apply to all other similar parts in the Work unless otherwise indicated or specifically noted.

§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

Wherever the term "Architect" appears in this Agreement, it shall mean either Architect or Engineer.

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The drawings, specifications and other documents, including those in electronic form, prepared by the Architect and the Architect's consultants are Instruments of Service through which the Work to be executed by the Contractor is described. The Contractor may retain one record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the drawings, specifications and other documents prepared by the Architect or the Architect's consultants, and unless otherwise indicated the Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, them, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, in addition to the copyrights. All copies of Instruments of Service, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The drawings, specifications and other documents prepared by the Architect and the Architect's consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. As such, the City is hereby declared sole-owner of these documents in regards to this Project and will abide by the limitations described in Subparagraph 1.5.1. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service, are authorized to use and reproduce applicable portions of the drawings, specifications and other documents prepared by the Architect and the Architect's consultants appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the drawings, specifications and other documents prepared by

the Architect and the Architect's consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

~~§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.~~

§ 1.5.2. Intentionally Omitted.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

~~§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.~~

§ 2.2.1. Intentionally Omitted.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise specified, the following applies:

a. Water line taps, construction of pits for water taps and meter, and restoration of the area to its original condition shall be performed by the Contractor at its expense. Only new water meters shall be installed by City forces at the expense of project sponsor (i.e. the City or private developer). All the aforementioned shall be coordinated by the Contractor.

b. Sanitary taps and cleanouts shall be done by the Contractor or its Subcontractor at the Contractor's expense. HRSD tap fees will be paid by the Owner.

c. For gas and electrical work and associated meter installations, the Contractor shall be responsible for complete coordination of work with utilities, including provision of all necessary labor, equipment, and materials as required in the Contract Documents as well as payment of all resulting costs to aforesaid Work.

d. For telephone and cables, the Contractor shall be responsible for coordination of telephone trunk lines and cable installation with telephone/television company to the "point of penetration" to the facility, including provision of all necessary labor, equipment, and materials as required in the Contract Documents as well as payment of resulting costs to all aforesaid work.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner-Owner, subject to Subparagraph 3.74, but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.3.1 The Contractor shall be responsible for protecting pins, stakes, marks, hubs, and control points. Replacement of damaged or destroyed pins, stakes, marks, hubs or control points shall be conducted under the supervision of a surveyor licensed in the Commonwealth of Virginia, if required by the City, and at the Contractor's expense. The Contractor shall coordinate with the Survey Division of the Department of Public Works (664-4645) prior to resetting of points and shall provide certified documentation to include the reference/recovery sheet with swing ties for new benchmarks.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.(1) CD containing the drawings, specifications, and addendums, in PDF format, free of charge..

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents. Any failure by the Contractor to acquaint himself with such information shall not relieve him from the responsibility for successfully performing the Work.

.1 Dimensions of Work shall not be determined by scale or rule, but figured dimensions shall be used at all times.

.2 The Contractor shall verify all dimensions by measurement at the jobsite, and shall take any and all other measurements necessary to verify the drawings and to properly layout the Work.

.3 The study of the Contract Documents by the Contractor shall be made sufficiently in advance of the actual layout of the work so as to allow the Contract Documents to be interpreted or modified by the Architect.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions issued by the Architect in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. ~~If the Contractor performs these obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, or for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities. Documents unless the Contractor recognized such error, inconsistency, omission or difference and knowingly failed to report it to the Architect.~~

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means,

methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

a. Substituted Materials. Request for approval of any substituted material and equipment for those specified or shown on the drawings shall be made in writing to the Engineer within 30 days after award of the Contract. If this request is not submitted, the Engineer reserves the right to have the Contractor furnish the material and equipment definitely specified or shown on the plans. The Contractor shall show, in writing, the monetary savings, improvement in quality, time savings, and other factors to be gained from the proposed substitute. Approval of substitute materials and equipment will be at the sole discretion of the Engineer.

b. Or Equal. It is not the intent of these specifications to exclude or omit products or any responsible manufacturer, if said products are equal in every respect to those mentioned herein. Whenever an article, or any class of materials is specified by trade name or byname of any particular patentee, manufacturer or dealer, it shall be taken as intending to mean equal thereto in quality, finish, size, durability and equally as serviceable for the purpose for which it is or they intended. Request for approval of any "equal" material or product for those specified or shown on the drawings shall be made in writing to the Engineer within 30 days after award of the Contract. If this request is not submitted, the Engineer reserves the right to have the Contractor furnish the material and products definitely specified and shown on the plans. The Contractor shall show, in writing, that the material or product being proposed is equal in every respect to that specified and shall provide all necessary supporting documentation requested by the Engineer. The quality shall be determined by the Engineer, and he alone shall be sole judge as to what materials or services will be accepted as equal. No substitution of materials, methods or services specified shall be made without written approval from the Engineer.

c. Materials and Equipment Manufacturer's Recommendation. All materials, equipment or other items specified by trade or manufacturer's name shall be handled, installed, erected or connected in strict conformity with the manufacturer's recommendations and/or specifications. By making requests for substitutions, the Contractor:

1. Represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;

2. Represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified;

3. Certifies that the cost data presented is complete and includes all related costs under this Contract except the Architect's redesign costs, and waives all claims for additional costs and time extensions related to the substitution which may subsequently become apparent; and

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4. Will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. The Contractor shall be advised that there is NO permit fee for new construction, additions, etc. for CITY-OWNED BUILDINGS. Before final payment is made on the Project, Contractor shall demonstrate that the necessary inspections, certificates of occupancy, clearance, and/or acceptance from the City, State, Federal, and/or private entities/organizations such as from the City's Building Official, Corps of Engineers, Department of Environmental Quality, etc. have been obtained.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 **Concealed or Unknown Conditions.** If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. Contractor shall not disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so "except in an emergency as required by Paragraph 10.4.. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. With respect to unforeseen Work that is paid on a Unit Price Basis, any adjustment in quantity and Contract price will be determined by the Architect/Engineer subject to the provisions of Subparagraph 15.1.5.3. Architect/Engineer will review with the Contractor the Architect/Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or

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otherwise). If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.4.1 Possible Price and Times Adjustments. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Terms if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner in respect to Contract price and Contract times by the submission of a Bid or becoming bound under a negotiated contract; or

b. The existence of such condition could reasonably have been discovered or revealed as a result of examination, investigation, exploration, test, or study of the Site and contiguous areas required by the bidding requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give written notice within the time and as required by Subparagraph 3.7.4.

§ 3.7.4.2 Subsurface and Physical Conditions. The Contract Documents identify:

a. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that the Architect/Engineer has used in preparing the Contract Documents.

b. Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that the Architect/Engineer has used in preparing the Contract Documents.

§ 3.7.4.3 Limited Reliance by Contractor on Technical Data Authorized. Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data", if any, shall be identified in Supplementary General Conditions. Contractor may not rely upon or make any claim against Owner, Architect/Engineer, or any of the Architect/Engineer's consultants with respect to:

a. The completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by the Contractor, and safety precautions and programs incident thereto; or

b. Any Contractor interpretation of or conclusion drawing from any "technical data" or any such data, interpretations, opinions, or information.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2. The Contractor shall attach with monthly invoices the original copy of sales invoices/receipts for materials or equipment that are covered under allowances.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner ~~with reasonable promptness in~~ sufficient time to avoid delay in the Work..

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. ~~Important~~ communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

1. The superintendent shall not be changed except with the consent of the Owner, unless the superintendent ceases to be in the Contractor's employ.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, and prior to mobilization or proceeding with any work on site, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.9.4 A qualified General Superintendent shall be present on the project site whenever work is being performed, unless otherwise authorized in writing by the Owner. The Contractor shall notify the Owner whenever the superintendent will be absent for four hours or more. This notification shall include the name of the designated substitute. Any substitute shall be familiar with the project and have the same authority of the primary superintendent. Verbal notification is acceptable for periods less than one full workday.

1. The qualified General Superintendent shall remain on site each day throughout all work days whenever contract work is performed through the punch list period and until all punch list items are complete. Lack of supervision shall constitute a reduction in the Contract Amount of General Conditions, Supervision, or other category which solely represents at the General Contractor's work responsibility, in the amount of \$250.00 per day, or any portion of a day, based on the amount indicated.

§ 3.9.5 The superintendent shall serve as a day to day point of contact on the Project for the Owner and shall, as a minimum, have the authority to:

a. Act on behalf of the Contractor;

b. Direct the work of Subcontractors;

c. Respond to directed changes in the schedule;

d. Provide detailed updates to and respond to inquiries from the Owner on the progress of the work;

e. Act upon verbal and written notification of non-conforming work;

f. Respond to any complaints regarding the conduct or actions of any employee of the Contractor or any Subcontractor.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. At the Pre-Construction Conference, the Contractor shall submit to the Engineer for its timely review a preliminary construction schedule indicating the times (number of days or dates) for starting and completing the various stages of the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

1. The progress schedule shall be in the form of a bar graph and shall identify each major or critical activity. The progress schedule shall be updated monthly. Five (5) copies of the updated progress schedule shall be submitted with each Application for Payment.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

1. Reproduction of the Contract Drawings, or any portion thereof, shall not be acceptable.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal

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schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.

The Contractor, within 15 days from the Notice to Proceed, shall submit to the Engineer for approval, a complete schedule of submittals for shop drawings and technical and/or engineering data sheets covering all items and equipment for this Contract as listed in each respective division. Submit for approval six (6) copies of certified Shop Drawings and technical data sheets plus sufficient copies for Contractor's use. Approval of the above submissions shall not relieve the Contractor from complying with the drawings and specifications, nor shall such approval be construed as a guarantee of the accuracy of dimensions or other covered items. The Engineer shall endeavor to process all drawings, data sheets, etc., within 21 calendar days of receipt unless impractical. Except for construction schedule and schedule of values that need to be turned over directly to the City for review/approval, the Contractor shall forward all other submittals for review/approval to only one clearing house. The City will notify the Contractor during the Pre-Construction Conference where to send these submittals.

1. Unless otherwise directed or specified, samples shall be submitted in duplicate. Samples shall be properly labeled, bearing the name and quality of material, name of the manufacturer, name of Project, name of the Contractor and the date of submission.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, ~~or will do so and~~ (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. All copies of Shop Drawings submitted for approval shall bear the following statement: "Checked and certified correct for conformance with Contract Documents." This statement shall be dated and signed by the Contractor and shall appear on each submittal. One copy of each approved submittal shall be kept at job site at all times.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

1. The Contractor shall furnish to the field as many prints of the approved Shop Drawings as may be required.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear

such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.14.3 UNDERGROUND UTILITY DAMAGE PREVENTION ACT

The Contractor shall be required and agrees to comply with all the provisions of the Virginia Underground Utility Damage Prevention Act (Section 56-265.14, et seq. Code of Virginia, 1950, as amended) and hereby agrees to hold the City of Norfolk harmless against any loss, damages or claims of any nature whatsoever arising out of the Contractor's failure to comply with the requirements of said Act.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project. In addition, immediately after the completion of the Work, or any portion thereof, the Contractor shall restore the facility, street, and surrounding area to a condition as clean as before the Work was begun. The drainage system shall also be inspected and cleaned by the Contractor. If done by the City or its agents, any expense the City may incur will be charged against the Contractor and deducted before Final Payment is made. The Contractor will be required to back fill along the edges of the sidewalks, driveways and curbs where settlement has occurred, and reshape and reslope where directed. Site must be maintained regularly according to State and City regulations, including regular grass cutting. During the progress of the Work, the sidewalks and portions of the streets adjoining the Work, or in its vicinity, must not be obstructed or littered, and the adjacent sidewalks and gutters must be kept clean as directed by the Engineer.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and ~~Owner shall be entitled to reimbursement from the costs thereof shall be charged to the Contractor.~~

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but

shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity ~~that which~~ would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.1.1 The requirements of this Paragraph 3.18 shall be incorporated into the Contractor's insurance policies in a manner approved by the Owner.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 ~~The Owner shall retain an architect~~ architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture ~~in the jurisdiction where the Project is located. That person or entity is identified as the Architect identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number.~~ The term "Architect" means the Architect or the Architect's authorized representative.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

~~§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.~~

§ 4.1.3. Intentionally Omitted.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 ~~As the Owner's Project representative, the Consulting Architect/Engineer's duties, responsibilities and limitations of authority shall be presented during the Pre-Construction Conference.~~ The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.1.1 Engineer – An individual or entity having an Agreement with the Owner to furnish services as Owner's independent professional consultant with respect to the Project and who is identified as such in the Agreement.

§ 4.2.2 ~~The Architect~~ Architect, as a representative of the Owner, will visit the site at intervals appropriate to the stage of construction, ~~or as otherwise agreed with the Owner, to become generally familiar with the Contractor's~~

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operations (1) to become familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that (2) to endeavor to guard the Owner against defects and deficiencies in the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not ~~neither~~ have control over, charge of, or responsibility nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and

assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

§ 4.2.15 PRE-CONSTRUCTION CONFERENCE. Before starting the Work, the Architect/Engineer/Owner will schedule a conference to review the requirements on such matters as Project supervision and on-site inspection, Shop Drawing schedules and submission, progress schedules and reports, payrolls, payments to contractors, contract change orders, insurance, safety, labor provisions and equal opportunity in employment and any other items pertinent to the Project. Present at the conference will be the Architect/Engineer, Owner, Project Representative, the Contractor, and its Superintendent for the project.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, ~~as soon as practicable within~~ 15 days after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

~~§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.~~objection..

~~§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect~~Architect, upon written notice of such intent, makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

~~When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.~~

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

~~§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.~~

§ 5.4.3. Intentionally Omitted.

§ 5.5 SUBCONTRACTORS COORDINATION OF WORK

Every subcontractor performing work that affects others shall provide for all requirements of the other trades, notwithstanding the Contractor's responsibility to coordinate the Work. Should the work provided by unsuitable for the application of work by any other subcontractor, the subcontractor shall notify the Contractor and the Engineer in writing immediately. The Contractor is required to forward a copy of correspondence from his subcontractors providing notice of unsuitable work.

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ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. ~~If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15: subrogation..~~

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement ~~among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or between the Owner and Contractor; a Construction Change Directive may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.~~

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.1.4 Modifications shall be in compliance with the Code of the City of Norfolk, Virginia, Chapter 33.1.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 ~~Unit prices stated in the Contract Documents or subsequently agreed upon; Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Architect/Engineer's recommendation to the City as follows:~~

Architect/Engineer will review with Contractor the Architect/Engineer's preliminary determinations on such matters before rendering a written recommendation thereon (by endorsement of an Application for Payment or otherwise). City's written decision thereon (by approval of Application for Payment or otherwise) will be final and binding (except as modified by Architect/Engineer to reflect changed factual conditions or more accurate data) upon Contractor, subject to the provisions of Paragraph 7.3.4.

Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted ~~adjusted~~ provided that there is no corresponding adjustment with respect to any other item of Work.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 ~~Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and~~ Overhead and profit costs, except where such costs have been determined by means of Paragraph 7.3.3.2 above, wherein such costs are included in the unit prices, shall be determined as follows:

Fifteen percent (15%) of the costs determined above shall be paid for overhead and profit of the Contractor or subcontractor(s) actually performing the work, including, but not limited to, field and home office expense, superintendent, taxes, subsistence expenses of any nature, premiums on bonds, insurance, and all other costs and expenses as determined by the City.

In the event the work is performed by a subcontractor or subcontractors, the Contractor shall be paid ten percent (10%) of the total costs determined above, excluding the subcontractor's or subcontractors' overhead and profit, to cover and compensate the Contractor for its overhead and profit;

- .5 ~~Additional costs of supervision and field office personnel directly attributable to the change.~~
Intentionally Omitted.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. ~~Architect plus overhead and profit to actual net cost.~~ When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may not request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for these costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15. Contractor may only include the amounts of fully executed Change Orders in the Applications for Payment.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the ~~Owner pending mediation and arbitration;~~ Owner; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

Based upon Applications for Payment submitted to the Engineer by the Contractor and certificates for payment issued by the Engineer, the City shall make monthly progress payments on account of the Contract Sum to the Contractor as provided in these General Conditions of the Contract for Construction as follows:

The City will endeavor to pay the Contractor, on or about the thirtieth (30th) calendar day after receipt of Request for Payment, ninety-five (95%) percent of the portion of the Contract Sum properly allocated to labor, materials and equipment incorporated in the work and ninety-five (95%) percent of the portion of the Contract Sum properly allocated to materials and equipment suitably stored at the site or at some other location agreed upon in writing by the parties, less the aggregate of previous payments in each case; provided however, the City, at any time after fifty (50%) percent of the work has been completed, if it finds that satisfactory progress is being made, may in its sole discretion make any of the remaining partial payments in full. Also, upon Substantial Completion of the work, the City may increase total payment to one hundred (100%) percent of the Contract sum, less such retainage as the Engineer shall determine for incomplete work and unsettled claims. But such full payment or payments shall in no manner be construed as reducing the amount of the bond or the liability of the Surety thereon, until Final Completion and acceptance of all lines of work herein set forth. Final Payment shall be made upon completion of all work and acceptance by the Engineer in accordance with the General Conditions.

The action of the Engineer by which the Contractor is to be bound according to the terms of this Contract shall be evidenced by his final estimate and certificate, all prior estimates upon which ninety-five (95%) percent or more may be made, being merely payments on account, and not payments for accepted work, and subject to the corrections of such final estimate, which may be made without notice to the Contractor thereof, or of the measurements upon which the same is based.

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be ~~notarized, if required,~~ certified by an officer of the firm and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may not include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, ~~or by interim determinations of the Architect,~~ but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such

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materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a separate contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.
- .8 failure to comply with obligations under the Contract.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld. The City reserves the right to determine payment made.

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§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner is obligated to take one of the two following actions within seven (7) days after receipt of amounts paid to the Contractor by the Owner for work performed by any subcontractor under this Agreement:

a. Pay the subcontractor for the proportionate share of the total payment received from the Owner attributable to the work performed by the subcontractor under this Agreement; or

b. Notify the Owner and the subcontractor, in writing, of the Contractor's intention to withhold all or a part of the subcontractor's payment with the reason for nonpayment.

The Contractor is obligated to pay interest to the subcontractor on all amounts owed by the Contractor to the subcontractor that remain unpaid after seven (7) days following receipt by the Contractor of payment from the Owner for work performed by the subcontractor under this Agreement. Unless otherwise provided under the terms of this Agreement, interest shall accrue at the rate of one percent (1%) per month.

The Contractor shall include in each of its subcontracts, if any are permitted, a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements with respect to each lower-tier subcontractor.

The Contractor's obligation to pay an interest charge to a subcontractor pursuant to this section may not be construed to be an obligation of the City. A contract modification or Amendment to the Agreement may not be made for the purpose of providing reimbursement for such interest charge. A cost reimbursement claim may not include any amount for reimbursement for such interest charge.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor. A Subcontractor inquiry for progress payment and other information shall be directed to the City Attorney's office under the Freedom of Information Act..

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by

the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

~~If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut down, delay and start up, plus interest as provided for in the Contract Documents.~~ Intentionally Omitted.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. The Contractor shall submit a Contractor's release from liens, claims, security interests or encumbrances along with final invoice. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction. The Contractor shall provide temporary fences, barricades, coverings, or other protection to preserve existing items indicated to remain and to prevent injury or damage to persons or property.

This includes providing protection of the Work, materials, appliances and fixtures against weather, rain, wind, storms, freezing or heat. At the end of the day's work, work likely to be damaged shall be properly protected. For work on existing buildings, the Contractor shall accomplish the work in such a manner that the remainder of the building, and its contents and inhabitants, are fully protected from any weather damage.

The Contractor shall be responsible for ensuring that adequate measures are taken to secure materials and equipment during the progress of the Work to prevent storm-related hazards. It is, therefore, essential that the Contractor take necessary precautions to ensure that openings in the building are monitored carefully. The Contractor shall take immediate actions required to seal of such openings when rain or other detrimental weather is imminent, and at the end of each workday; and ensure that the openings are completely sealed off to protect materials and equipment in the building from damage.

The provisions of this subparagraph take precedence over any similar provisions contained in the technical specifications.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. ~~If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection.~~ Owner. When the material or substance has been rendered harmless, Work in the affected area shall resume upon ~~written agreement of the Owner~~ direction by the City and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

~~§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.~~

§ 10.3.3. Intentionally Omitted.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site ~~unless such materials or substances are required by the Contract Documents.~~ site. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

§ 10.4.1 EMERGENCY CONDITIONS. The issuance of a Declaration of Emergency conditions by any authorized government official may result in the suspension of the Work under the Contract and/or the ordering by the City of additional work. The Contractor shall make available to the City, during the time of the declared emergency, labor and equipment for such services under the terms and conditions of the Contract. Labor and equipment rates shall not exceed FEMA reimbursable rates for the Hampton Roads area. Failure to comply with such emergency directives may result in termination of the Contract by reason of non-compliance.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

See Subparagraphs 3.18.1 and 10.3.1

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability. All liability policies shall be written in an occurrence form unless otherwise specifically approved by the City.

The Contractor shall secure and maintain in force insurance, including malicious mischief and vandalism, with minimum acceptable amounts described below, naming the City as additional insured during the life of the Contract:

.1	Worker's Compensation	Statutory
	Employer's Liability	\$200,000 per accident injury
.2	Commercial General Liability	Combined single limit \$3,000,000 or
		\$2,000,000 per occurrence
		\$3,000,000 aggregate
		\$3,000,000 products & completed
		Operations

The Commercial General Liability Insurance required above shall include the following extensions of coverage:

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- (1) The coverage shall be provided under a Comprehensive form of policy or similar thereto.
- (2) X.C.U. Coverage – If the Contract requires any work procedures involving blasting, excavating, tunneling or other underground work, the liability coverage shall include Standard Blasting or Explosion Coverage, Standard Collapse Coverage and Standard Underground Coverage, commonly referred to as XCU liability coverage with limits of \$500,000 per occurrence and \$1,000,000 aggregate.
- (3) Broad Form Property Damage Endorsement.
- (4) Contractual Liability coverage shall be included.
- (5) Protective Liability coverage shall be included to protect the Contractor against claims arising out of operations performed by its Subcontractors.
- (6) Products Liability and/or Completed Operations coverage shall be included.

.3 Comprehensive Automobile Liability including owned, non-owned and hired vehicles:

Combined Single limit each accident	\$2,000,000
Bodily Injured	\$1,000,000 per person
	\$2,000,000 per occurrence
	\$2,000,000 aggregate
Property Damage	\$500,000 per occurrence

.4 Environmental Impairment Liability Insurance. If applicable, as determined by the City, the Contractor shall procure and maintain during the life of the Contract Environmental Impairment Liability Insurance, which shall protect against all claims and costs including, but not limited to, bodily injury or property damage claims (including clean-up costs) caused by pollution conditions, as herein defined, arising from the contracted work. Pollution conditions means the discharge, dispersal, release or escape of smoke vapor, soot, fumes, acids, alkalis, toxic chemicals, liquids, gases, waste materials or other irritants, contaminants, or pollutants into or upon land, the atmosphere or any watercourse or body of water, which results in bodily injury or property damage. The policy limits will be determined by the City and specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or as prescribed by City, State or Federal law/regulations. Coverages, written on a claims-made basis, shall be maintained without interruption from the date of commencement of the Work until at least one year following the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 All insurance policies required hereunder shall contain an express provision therein, or endorsement attached thereto, worded substantially as follows:

"This is not to be cancelled or become subject to reduction of coverage prior to thirty days after the insured has received written notice mailed to the address noted hereinbefore, as evidenced by return receipt of registered letter."

All insurance certificates and/or policies shall designate the City of Norfolk, its employees, and its agents as "additional insured" regarding the contracted Work.

Certificates of Insurance issued by companies licensed within the Commonwealth of Virginia shall provide the designed insurance.

Contractor shall notify the City in writing within 10 days after receiving notice of any cancellation or reduction in coverage.

Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies

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will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

~~§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.~~ **SUBCONTRACTOR'S INSURANCE.** The Contractor shall require all subcontractors to secure and maintain in force containing the same coverage and amounts as described in Subparagraph 11.1.2.

§ 11.2 OWNER'S LIABILITY INSURANCE

~~The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.~~
Intentionally Omitted.

§ 11.3 PROPERTY INSURANCE

~~§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.~~ Until the work is completed and accepted by the City, the Contractor shall purchase and maintain a Builder's Risk or property insurance as is appropriate upon the entire work at the Site to the full insurable value thereof.

~~§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.~~

~~§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.~~

~~§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.~~

~~§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.~~

~~§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or~~

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companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.1.1. Intentionally Omitted.

§ 11.3.1.2. Intentionally Omitted.

§ 11.3.1.3. Intentionally Omitted.

§ 11.3.1.4. Intentionally Omitted.

§ 11.3.1.5. Intentionally Omitted.

§ 11.3.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds. Intentionally Omitted.

§ 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished. A Performance Bond and Payment Bond Rider is required for all Change Orders that are in the amount of \$100,000 or greater; or, if the aggregate total of multiple Change Orders is equal to or greater than \$100,000.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties

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established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

~~§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.~~

§ 12.2.2.3. Intentionally Omitted.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST

~~Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.~~ Intentionally Omitted.

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law,

but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

~~§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:~~

- ~~.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;~~
- ~~.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;~~
- ~~.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or~~
- ~~.4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.~~

~~§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.~~

~~§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.~~

~~§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.~~

§ 14.1.1: Intentionally Omitted

- .1 ;
- .2 ;
- .3 ;
- .4 .

§ 14.1.2. Intentionally Omitted.

§ 14.1.3. Intentionally Omitted

§ 14.1.4. Intentionally Omitted

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

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§ 14.2.2 When any of the above reasons exist, the Owner, ~~upon certification by the Initial Decision Maker that sufficient cause exists to justify such action,~~ may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not ~~executed~~, executed and costs incurred from this termination.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- 1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- 2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 INITIAL DECISION

§ 15.2.1 Decision of Owner. Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision, evaluation and recommendation. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision-a final decision by the Owner shall be required as a condition precedent to mediation of any Claim-litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker Architect with no decision having been rendered-rendered by the Owner. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide-evaluate disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker-Architect will review Claims and within ten days of the receipt of a-the Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject-recommend rejection of the Claim in whole or in part, (3) approve-recommend approval of the Claim, (4) suggest-recommend a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to

evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will ~~either reject or approve~~ recommend either rejection or approval of the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will ~~render an initial decision~~ recommend approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The ~~initial Owner's~~ decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution subject to mediation or arbitration.

~~§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.~~

~~§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.~~

§ 15.2.6. Intentionally Omitted

§ 15.2.6.1. Intentionally Omitted.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 MEDIATION

~~§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.~~

~~§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.~~

~~§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.~~

~~§ 15.3.1. Intentionally Omitted.~~

~~§ 15.3.2... Intentionally Omitted.~~

~~§ 15.3.3... Intentionally Omitted.~~

§ 15.4 ARBITRATION

~~§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.~~

~~§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.~~

~~§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~

~~§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.~~

~~§ 15.4.1... Intentionally Omitted.~~

~~§ 15.4.1.1... Intentionally Omitted.~~

~~§ 15.4.2. Intentionally Omitted.~~

~~§ 15.4.3. Intentionally Omitted.~~

§ 15.4.4 CONSOLIDATION OR JOINDER

~~§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

~~§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~§ 15.4.4.1. Intentionally Omitted.~~

~~§ 15.4.4.2.. Intentionally Omitted.~~

~~§ 15.4.4.3. Intentionally Omitted.~~

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PART II

1. SCHEDULES AND REPORTS

Contractor shall submit for approval the following items in four (4) copies prior to commencing the Work:

a. A complete, detailed construction progress schedule in weekly increments, showing anticipated start and completion of all sections of the Work. Also, see sections 3.10 and 3.10.1

b. A complete list of Subcontractors

c. A breakdown of the Project contract price for use in processing monthly requisitions.

d. A projection of contract's monthly cash flow requirements for the duration of the Project.

e. The above requirements may be waived for small projects at the discretion of the Engineer.

2. MINORITY PARTICIPATION

The Contractor shall notify the City in writing of the names of any minority and disadvantaged business subcontractors to be used on the Project, including the estimated dollar amount of such subcontract and the minority classification of such subcontractors. A minority and disadvantaged business is one that is at least 51% owned by an Asian American, Black, Hispanic, and American Indian, Eskimo, Aleut, or Female.

3. EROSION & SEDIMENT CONTROL

On construction projects that are required by the City's Erosion & Sediment Control ordinance (City Code Chapter 15) to have an approved erosion and sediment control plan, the Contractor shall be required to implement the approved plan and comply with all conditions of the plan. A copy of the approved plan and the Virginia Erosion and Sediment Control Handbook. (Third Edition, 1992) shall be kept at the City. If the Contractor determines that the approved plan cannot be effectively carried out, the Contractor shall be responsible for notifying the plan approving authority and requesting a plan amendment as provided for in the Virginia Erosion and Sediment Control Law (Code of Virginia Title 10.1, Chapter 5, Article 4, Section 10.1-563C).

4. RIGHT TO AUDIT

For cost-reimbursement contracts, change orders issued for fixed priced contracts or other contracts in excess of \$30,000, which include the provisions of services, the Contractor shall retain all books, records and other documents relative to this Contract for five (5) years after final payment or until audited by the Office of the City Auditors shall have full access to and the right to examine and duplicate any of said materials during said period.

~~§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.~~

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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Work under separate contracts.
4. Access to site.
5. Work restrictions.
6. Specification and drawing conventions.
7. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

A. Project Identification:

1. Project Location: 7620 Shirland Avenue, Norfolk, Virginia 23505

B. Owner:

1. Owner's Representative: Oliver Love, City of Norfolk, Department of Public Works; (757) 664-4602.

C. Architect: Waller, Todd & Sadler Architects, Inc., 1909 Cypress Avenue, Virginia Beach, Virginia 23451; (757) 417-0140.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. The demolition of the existing Meadowbrook School and adjacent site appurtenances as indicated on accompanying drawings. Existing utility service to the building shall be removed to property line and capped off and abandoned as indicated. Resultant site shall be fine graded, seeded, and lawn established.

B. Type of Contract.

1. Project will be constructed under a single prime contract.

1.4 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

1.5 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7:30 a.m. to 3:30 p.m., Monday through Friday, unless otherwise indicated.

1.6 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawing].
 - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.2 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.
- B. Contractor-Initiated Work Change Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Work Change Proposal Request Form: Use form acceptable to Architect.

1.4 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.5 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 2. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.2 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
 - 3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 - 2. Arrange schedule of values consistent with format of AIA Document G703.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
 - a. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Times: Submit Application for Payment to Architect by the 25th of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
- D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- F. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Sustainable design submittal for project materials cost data.
 4. Contractor's construction schedule (preliminary if not final).
 5. Sustainable design action plans.
 6. Schedule of unit prices.
 7. Submittal schedule (preliminary if not final).
 8. List of Contractor's staff assignments.
 9. List of Contractor's principal consultants.
 10. Copies of building permits.
 11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 12. Initial progress report.
 13. Report of preconstruction conference.
 14. Certificates of insurance and insurance policies.
- I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706-1994, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A-1994, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707-1994, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Coordination drawings.
 - 2. Requests for Information (RFIs).
 - 3. Project meetings.

1.2 DEFINITIONS

- A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.3 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.

1.4 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Preinstallation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.

1.5 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of Architect.
 6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- C. RFI Forms: AIA Document G716.

- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow **seven** working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect's actions on submittals.
 - f. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Software log with not less than the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number including RFIs that were dropped and not submitted.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.6 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for RFIs.
 - g. Procedures for testing and inspecting.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Sustainable design requirements.
 - l. Preparation of record documents.
 - m. Use of the premises.
 - n. Work restrictions.
 - o. Working hours.
 - p. Owner's occupancy requirements.
 - q. Responsibility for temporary facilities and controls.
 - r. Procedures for moisture and mold control.
 - s. Procedures for disruptions and shutdowns.
 - t. Construction waste management and recycling.
 - u. Parking availability.
 - v. Office, work, and storage areas.
 - w. Equipment deliveries and priorities.
 - x. First aid.
 - y. Security.
 - z. Progress cleaning.
 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Progress Meetings: Conduct progress meetings at biweekly intervals.

1. Attendees: In addition to representatives of Owner, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Status of sustainable design documentation.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site utilization.
 - 9) Temporary facilities and controls.
 - 10) Progress cleaning.
 - 11) Quality and work standards.
 - 12) Status of correction of deficient items.
 - 13) Field observations.
 - 14) Status of RFIs.
 - 15) Status of proposal requests.
 - 16) Pending changes.
 - 17) Status of Change Orders.
 - 18) Pending claims and disputes.
 - 19) Documentation of information for payment requests.
3. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's construction schedule.
 - 2. Construction schedule updating reports.
 - 3. Daily construction reports.
 - 4. Site condition reports.

1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

1.3 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Working electronic copy of schedule file, where indicated.
 - 2. PDF electronic file.
 - 3. Two paper copies.

- B. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
 - 1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
- D. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
 - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
 - 3. Total Float Report: List of all activities sorted in ascending order of total float.
 - 4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.
- E. Construction Schedule Updating Reports: Submit with Applications for Payment.
- F. Daily Construction Reports: Submit at weekly intervals.
- G. Site Condition Reports: Submit at time of discovery of differing conditions.

1.4 COORDINATION

- A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
 2. Work under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 5. Work Stages: Indicate important stages of construction for each major portion of the Work.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.
- E. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
1. Unresolved issues.
 2. Unanswered Requests for Information.
 3. Rejected or unreturned submittals.
 4. Notations on returned submittals.
 5. Pending modifications affecting the Work and Contract Time.

- F. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule.
- G. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for the Notice to Proceed.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.3 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. List of separate contractors at Project site.
 - 3. Approximate count of personnel at Project site.
 - 4. Equipment at Project site.
 - 5. Material deliveries.
 - 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 - 7. Accidents.
 - 8. Meetings and significant decisions.
 - 9. Unusual events.
 - 10. Stoppages, delays, shortages, and losses.
 - 11. Meter readings and similar recordings.
 - 12. Emergency procedures.
 - 13. Orders and requests of authorities having jurisdiction.
 - 14. Change Orders received and implemented.
 - 15. Construction Change Directives received and implemented.
 - 16. Services connected and disconnected.
 - 17. Equipment or system tests and startups.
 - 18. Partial completions and occupancies.
 - 19. Substantial Completions authorized.
- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. Post copies in Project meeting rooms and temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Periodic construction photographs.

1.2 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph or video recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit unaltered, original, full-size image files within three days of taking photographs.
1. Digital Camera: Minimum sensor resolution of 8 megapixels.
 2. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Date photograph was taken.
 - d. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

1.3 QUALITY ASSURANCE

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.4 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in JPG format, with minimum size of 8 megapixels.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in file name for each image.
 - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.
- D. Preconstruction Photographs: Before commencement of demolition, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag construction limits before taking construction photographs.
 - 2. Take minimum 40 photographs to show existing conditions adjacent to property before starting the Work.
- E. Additional Photographs: Architect may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.
 - 1. Three days' notice will be given, where feasible.
 - 2. In emergency situations, take additional photographs within 24 hours of request.
 - 3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
 - d. Substantial Completion of a major phase or component of the Work.
 - e. Extra record photographs at time of final acceptance.

- f. Owner's request for special publicity photographs.

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
 - 1. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action.
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.3 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic copies of digital data files of the Contract Drawings will not be provided by Architect for Contractor's use in preparing submittals.
 - 1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.
 - a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - b. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
 3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
 4. Transmittal Form for Electronic Submittals: Use software-generated form from electronic project management software acceptable to Owner, containing the following information:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Name of firm or entity that prepared submittal.
 - g. Names of subcontractor, manufacturer, and supplier.
 - h. Category and type of submittal.
 - i. Submittal purpose and description.
 - j. Specification Section number and title.
 - k. Specification paragraph number or drawing designation and generic name for each of multiple items.

- l. Drawing number and detail references, as appropriate.
 - m. Location(s) where product is to be installed, as appropriate.
 - n. Related physical samples submitted directly.
 - o. Indication of full or partial submittal.
 - p. Transmittal number, numbered consecutively.
 - q. Submittal and transmittal distribution record.
 - r. Other necessary identification.
 - s. Remarks.
5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
 - a. Project name.
 - b. Number and title of appropriate Specification Section.
 - c. Manufacturer name.
 - d. Product name.
- E. Options: Identify options requiring selection by Architect.
- F. Deviations: Identify deviations from the Contract Documents on submittals.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements:
 1. Post electronic submittals as PDF electronic files directly to Architect's FTP site specifically established for Project.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 2. Submit electronic submittals via email as PDF electronic files.

- a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 3. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before or concurrent with Samples.
 6. Submit Product Data in the following format:
 - a. PDF electronic file.
 - b. Three paper copies of Product Data unless otherwise indicated. Architect will return two copies.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on Architect's digital data drawing files is otherwise permitted.
 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

- a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).
 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Submit product schedule in the following format:
 - a. PDF electronic file.
- F. Coordination Drawings Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."
- H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- J. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- K. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- L. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- M. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- N. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- O. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- P. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- Q. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- R. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.

- S. Schedule of Tests and Inspections: Comply with requirements specified in Section 014000 "Quality Requirements."
- T. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- U. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- V. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- W. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect[**and Construction Manager**].
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 2. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
 - 3. Specific test and inspection requirements are not specified in this Section.

1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
 - 1. Laboratory Mockups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.3 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.4 INFORMATIONAL SUBMITTALS

- A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
 - 1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.

2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.
- B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.5 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
1. Date of issue.
 2. Project title and number.
 3. Name, address, and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Field Reports: Prepare written information documenting tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 5. Other required items indicated in individual Specification Sections.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.

- d. When testing is complete, remove test specimens, assemblies, and mockups; do not reuse products on Project.
- 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 - 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
 - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mockups when directed unless otherwise indicated.
- K. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections.

1.7 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
 - 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a manufacturer's representative to observe and inspect the Work. Manufacturer's representative's services include examination of substrates and conditions, verification of materials, inspection of completed portions of the Work, and submittal of written reports.
- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.

- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

- 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.8 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction, and as follows:

- B. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:

- 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
 - 2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
 - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 - 6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

- 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to Architect.
 - 4. Identification of testing agency or special inspector conducting test or inspection.

- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

1. AABC - Associated Air Balance Council; www.aabc.com
2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; (Formerly: ACI International); www.abma.com.
9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
11. AF&PA - American Forest & Paper Association; www.afandpa.org.
12. AGA - American Gas Association; www.aga.org.
13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
15. AI - Asphalt Institute; www.asphaltinstitute.org.
16. AIA - American Institute of Architects (The); www.aia.org.
17. AISC - American Institute of Steel Construction; www.aisc.org.
18. AISI - American Iron and Steel Institute; www.steel.org.
19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
21. ANSI - American National Standards Institute; www.ansi.org.
22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
23. APA - APA - The Engineered Wood Association; www.apawood.org.
24. APA - Architectural Precast Association; www.archprecast.org.
25. API - American Petroleum Institute; www.api.org.
26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
27. ARI - American Refrigeration Institute; (See AHRI).
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASCE - American Society of Civil Engineers; www.asce.org.
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Safety Engineers (The); www.asse.org.

34. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AWEA - American Wind Energy Association; www.awea.org.
38. AWI - Architectural Woodwork Institute; www.awinet.org.
39. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
40. AWWPA - American Wood Protection Association; www.awpa.com.
41. AWS - American Welding Society; www.aws.org.
42. AWWA - American Water Works Association; www.awwa.org.
43. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
44. BIA - Brick Industry Association (The); www.gobrick.com.
45. BICSI - BICSI, Inc.; www.bicsi.org.
46. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
47. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
49. CDA - Copper Development Association; www.copper.org.
50. CEA - Canadian Electricity Association; www.electricity.ca.
51. CEA - Consumer Electronics Association; www.ce.org.
52. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
53. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
54. CGA - Compressed Gas Association; www.cganet.com.
55. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
56. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
57. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
58. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
59. CPA - Composite Panel Association; www.pbmdf.com.
60. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
61. CRRC - Cool Roof Rating Council; www.coolroofs.org.
62. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
63. CSA - Canadian Standards Association; www.csa.ca.
64. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
65. CSI - Construction Specifications Institute (The); www.csinet.org.
66. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
67. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
68. CWC - Composite Wood Council; (See CPA).
69. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
70. DHI - Door and Hardware Institute; www.dhi.org.
71. ECA - Electronic Components Association; (See ECIA).
72. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
73. ECIA - Electronic Components Industry Association; www.eciaonline.org.
74. EIA - Electronic Industries Alliance; (See TIA).
75. EIMA - EIFS Industry Members Association; www.eima.com.
76. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
77. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
78. ESTA - Entertainment Services and Technology Association; (See PLASA).
79. EVO - Efficiency Valuation Organization; www.evo-world.org.
80. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.

81. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
82. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
83. FM Approvals - FM Approvals LLC; www.fmglobal.com.
84. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
85. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridarooft.com.
86. FSA - Fluid Sealing Association; www.fluidsealing.com.
87. FSC - Forest Stewardship Council U.S.; www.fscus.org.
88. GA - Gypsum Association; www.gypsum.org.
89. GANA - Glass Association of North America; www.glasswebsite.com.
90. GS - Green Seal; www.greenseal.org.
91. HI - Hydraulic Institute; www.pumps.org.
92. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
93. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
94. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
95. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
96. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
97. IAS - International Accreditation Service; www.iasonline.org.
98. IAS - International Approval Services; (See CSA).
99. ICBO - International Conference of Building Officials; (See ICC).
100. ICC - International Code Council; www.iccsafe.org.
101. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
102. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
103. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
104. IEC - International Electrotechnical Commission; www.iec.ch.
105. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
106. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
107. IESNA - Illuminating Engineering Society of North America; (See IES).
108. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
109. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
110. IGSHA - International Ground Source Heat Pump Association; www.igsha.okstate.edu.
111. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
112. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
113. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
114. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
115. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
116. ISO - International Organization for Standardization; www.iso.org.
117. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
118. ITU - International Telecommunication Union; www.itu.int/home.
119. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
120. LMA - Laminating Materials Association; (See CPA).
121. LPI - Lightning Protection Institute; www.lightning.org.
122. MBMA - Metal Building Manufacturers Association; www.mbma.com.
123. MCA - Metal Construction Association; www.metalconstruction.org.

124. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
125. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
126. MHIA - Material Handling Industry of America; www.mhia.org.
127. MIA - Marble Institute of America; www.marble-institute.com.
128. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
129. MPI - Master Painters Institute; www.paintinfo.com.
130. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
131. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
132. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
133. NADCA - National Air Duct Cleaners Association; www.nadca.com.
134. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
135. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
136. NBI - New Buildings Institute; www.newbuildings.org.
137. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
138. NCMA - National Concrete Masonry Association; www.ncma.org.
139. NEBB - National Environmental Balancing Bureau; www.nebb.org.
140. NECA - National Electrical Contractors Association; www.necanet.org.
141. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
142. NEMA - National Electrical Manufacturers Association; www.nema.org.
143. NETA - InterNational Electrical Testing Association; www.netaworld.org.
144. NFHS - National Federation of State High School Associations; www.nfhs.org.
145. NFPA - National Fire Protection Association; www.nfpa.org.
146. NFPA - NFPA International; (See NFPA).
147. NFRC - National Fenestration Rating Council; www.nfrc.org.
148. NHLA - National Hardwood Lumber Association; www.nhla.com.
149. NLGA - National Lumber Grades Authority; www.nlga.org.
150. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
151. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
152. NRCA - National Roofing Contractors Association; www.nrca.net.
153. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
154. NSF - NSF International; www.nsf.org.
155. NSPE - National Society of Professional Engineers; www.nspe.org.
156. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
157. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
158. NWFA - National Wood Flooring Association; www.nwfa.org.
159. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
160. PDI - Plumbing & Drainage Institute; www.pdionline.org.
161. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
162. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
163. RFCI - Resilient Floor Covering Institute; www.rfci.com.
164. RIS - Redwood Inspection Service; www.redwoodinspection.com.
165. SAE - SAE International; www.sae.org.
166. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
167. SDI - Steel Deck Institute; www.sdi.org.
168. SDI - Steel Door Institute; www.steeldoor.org.
169. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.

170. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
 171. SIA - Security Industry Association; www.siaonline.org.
 172. SJI - Steel Joist Institute; www.steeljoist.org.
 173. SMA - Screen Manufacturers Association; www.smainfo.org.
 174. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
 175. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
 176. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
 177. SPIB - Southern Pine Inspection Bureau; www.spib.org.
 178. SPRI - Single Ply Roofing Industry; www.spri.org.
 179. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
 180. SSINA - Specialty Steel Industry of North America; www.ssina.com.
 181. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
 182. STI - Steel Tank Institute; www.steeltank.com.
 183. SWI - Steel Window Institute; www.steelwindows.com.
 184. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
 185. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
 186. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
 187. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
 188. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
 189. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
 190. TMS - The Masonry Society; www.masonrysociety.org.
 191. TPI - Truss Plate Institute; www.tpinst.org.
 192. TPI - Turfgrass Producers International; www.turfgrasssod.org.
 193. TRI - Tile Roofing Institute; www.tilerroofing.org.
 194. UL - Underwriters Laboratories Inc.; www.ul.com.
 195. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
 196. USAV - USA Volleyball; www.usavolleyball.org.
 197. USGBC - U.S. Green Building Council; www.usgbc.org.
 198. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
 199. WASTEC - Waste Equipment Technology Association; www.wastec.org.
 200. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
 201. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
 202. WDMA - Window & Door Manufacturers Association; www.wdma.com.
 203. WI - Woodwork Institute; www.wicnet.org.
 204. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
 205. WWPA - Western Wood Products Association; www.wwpa.org.
- C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.
1. DIN - Deutsches Institut für Normung e.V.; www.din.de.
 2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
 3. ICC - International Code Council; www.iccsafe.org.
 4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov/fdsys.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeial Convention; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list.

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
3. DSCC - Defense Supply Center Columbus; (See FS).
4. FED-STD - Federal Standard; (See FS).
5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.
6. MILSPEC - Military Specification and Standards; (See DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
3. CDHS; California Department of Health Services; (See CDPH).
4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestservation.tamu.edu.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.2 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, testing agencies, and authorities having jurisdiction.

1.3 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire prevention program.

1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide concrete bases for supporting posts.

2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 - 1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Parking: Provide temporary parking areas for construction personnel.

D. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
3. Maintain and touchup signs so they are legible at all times.

F. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."
- F. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- G. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- H. Site Enclosure Fence: Before demolition operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
 - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
- I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period.

END OF SECTION 015000

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition waste.
 - 2. Recycling nonhazardous demolition waste.
 - 3. Disposing of nonhazardous demolition waste.
- B. Related Requirements:
 - 1. Section 024116 "Structure Demolition" for disposition of waste resulting from demolition of buildings, structures, and site improvements, and for disposition of hazardous waste.

1.2 DEFINITIONS

- A. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- B. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- C. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- D. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total non-hazardous solid waste generated by the Work. Facilitate recycling and salvage of materials.

1.4 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 30 days of date established for the Notice to Proceed.

1.5 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:

1. Material category.
 2. Generation point of waste.
 3. Total quantity of waste in tons (tonnes).
 4. Quantity of waste salvaged, both estimated and actual in tons (tonnes).
 5. Quantity of waste recycled, both estimated and actual in tons (tonnes).
 6. Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).
 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- D. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- E. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- F. Qualification Data: For waste management coordinator.

1.6 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of projects with similar requirements.
- B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.7 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of demolition waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 1. Distribute waste management plan to everyone concerned within three days of submittal return.
 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

3.3 RECYCLING DEMOLITION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

A. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.

B. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.

C. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

D. Metals: Separate metals by type.

1. Structural Steel: Stack members according to size, type of member, and length.
2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

3.5 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials and dispose of at designated spoil areas on Owner's property.
- D. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 024116 - STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Demolition and removal of buildings and site improvements.
 - 2. Removing below-grade construction.
 - 3. Disconnecting, capping or sealing, and abandoning in-place site utilities.

- B. Related Requirements:

- 1. Section 011000 "Summary" for use of the premises and phasing requirements.
 - 2. Section 013200 "Construction Progress Documentation" for preconstruction photographs taken before building demolition.
 - 3. Section 311000 "Site Clearing" for site clearing and removal of above- and below-grade site improvements not part of building demolition.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be demolished.

2. Review structural load limitations of existing structures.
3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review and finalize protection requirements.
5. Review procedures for noise control and dust control.
6. Review procedures for protection of adjacent buildings.
7. Review items to be salvaged and returned to Owner.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Engineering Survey: Submit engineering survey of condition of building.
- C. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- D. Schedule of Building Demolition Activities: Indicate the following:
 1. Detailed sequence of demolition work, with starting and ending dates for each activity.
 2. Temporary interruption of utility services.
 3. Shutoff and capping of utility services.
- E. Predemolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Comply with Section 013233 "Photographic Documentation." Submit before the Work begins.
- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.7 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

1.8 FIELD CONDITIONS

- A. Buildings to be demolished will be vacated and their use discontinued before start of the Work.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Hazardous Materials: Present in buildings and structures to be demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.

1. Hazardous material remediation is specified elsewhere in the Contract Documents.
 2. This section requires the removal and offsite disposal of all materials indicated in the Contract Documents.
 3. Refer to Appendix in specifications for reports for (1) Hazardous Material Inspection, (2) Asbestos Abatement Specification, (3) Lead in Construction Specification, and (4) Handling of PCB Ballasts and Mercury Lamps and Thermostats Specification.
- D. On-site storage or sale of removed items or materials is not permitted.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

2.2 SOIL MATERIALS

- A. Satisfactory Soils: Comply with requirements in Section 312000 "Earth Moving."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.
- D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- E. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations. Comply with Section 013233 "Photographic Documentation."

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Utilities to be Disconnected: Locate, identify, disconnect, and seal or cap off utilities serving buildings and structures to be demolished. Refer to Section 311000 Site Clearing for additional requirements.
 - 1. Arrange to shut off utilities with utility companies.
 - 2. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
 - 3. Cut off pipe or conduit a minimum of 24 inches (610 mm) below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.
 - 4. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.4 PROTECTION

- A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.
- B. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of demolition.
- C. Existing Utilities to Remain: Maintain utility services to remain and protect from damage during demolition operations.
 - 1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
 - 2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.
 - a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.
- D. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Section 015000 "Temporary Facilities and Controls."
 - 1. Protect adjacent buildings and facilities from damage due to demolition activities.
 - 2. Protect existing site improvements, appurtenances, and landscaping to remain.

3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
 4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
 6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
 7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.
- E. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.5 DEMOLITION, GENERAL

- A. General: Demolish indicated buildings and site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
 2. Maintain fire watch during and for at least 24 hours after flame-cutting operations.
 3. Maintain adequate ventilation when using cutting torches.
 4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- B. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed trafficways if required by authorities having jurisdiction.
 2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
- C. Explosives: Use of explosives is not permitted.

3.6 DEMOLITION BY MECHANICAL MEANS

- A. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.

- B. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 1. Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation.
- C. Below-Grade Construction: Demolish foundation walls and other below-grade construction that are within footprint of new construction and extending 5 feet (1.5 m) outside footprint indicated for new construction. Abandon below-grade construction outside this area.
 - 1. Remove below-grade construction, including basements, foundation walls, and footings, completely.
- D. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures. Cap all existing utilities at the property line unless otherwise noted.

3.7 SITE RESTORATION

- A. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials according to backfill requirements in Section 312000 "Earth Moving."
- B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.8 REPAIRS

- A. Promptly repair damage to adjacent buildings or onsite feature to remain caused by demolition operations.

3.9 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Do not burn demolished materials.

3.10 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

1. Clean roadways of debris caused by debris transport.

END OF SECTION 024116

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, Virginia Erosion and Sediment Control Handbook, 1992 (VSWC VESCH) applies to this section.
- C. City of Norfolk, Department of Utilities, Standard Design Criteria Manual, latest edition, as amended.
- D. City of Norfolk, Department Public Works, Norfolk City Design Standards, latest edition, as amended.
- E. City of Norfolk, Department of Public Works, Right-of-Way Excavation and Restoration Manual, latest edition, as amended.
- F. HRPDC Regional Standards, 5th Edition, with latest City of Norfolk Modifications.

1.2 SUMMARY

- A. Section Includes:
 - 1. Protecting existing vegetation to remain.
 - 2. Removing existing vegetation.
 - 3. Clearing and grubbing.
 - 4. Removing above- and below-grade site improvements.
 - 5. Disconnecting, capping or sealing, and removing site utilities.
 - 6. Temporary erosion- and sedimentation-control measures.
- B. Related Sections:
 - 1. Division 01 Section "Temporary Facilities and Controls" for temporary utility services, construction and support facilities, security and protection facilities.
 - 2. Section 024116 – Structure Demotion.

1.3 DEFINITIONS

- A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

- B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.
- D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.
- E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP

- A. Cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 SUBMITTALS

- A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed photographs or videotape.
 - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.
- B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Utility Locator Service: Notify Miss Utility for area where Project is located before site clearing.
- C. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.
- D. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.

3. Foot traffic.
 4. Erection of sheds or structures.
 5. Impoundment of water.
 6. Excavation or other digging unless otherwise indicated.
 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- E. Do not direct vehicle or equipment exhaust towards protection zones.
- F. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Division 31 Section "Earth Moving."
1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly identify trees, shrubs, and other vegetation to remain.
- C. Protect existing site improvements to remain from damage during construction.
1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to the requirements of VSWC VESCH, the City of Norfolk, and as indicated.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

- D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

- A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.
 - 1. Do not store construction materials, debris, or excavated material within fenced area.
 - 2. Do not permit vehicles, equipment, or foot traffic within fenced area.
 - 3. Maintain fenced area free of weeds and trash.
- B. Do not excavate within tree protection zones, unless otherwise indicated.
- C. Where excavation for new construction is required within tree protection zones, excavate in accordance with the notes and details on the drawings.
- D. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by City Forester.

3.4 EXISTING UTILITIES

- A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed.
 - 1. Arrange with utility companies to shut off indicated utilities.
- B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Architect not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Architect's written permission.
- C. Excavate for and remove underground utilities indicated to be removed.
- D. Removal of underground utilities is included in Division 22 Sections.

3.5 CLOSING UNDERGROUND UTILITY

- A. Close open ends of underground piping indicated to be removed. Include closures strong enough to withstand hydrostatic and earth pressures that may result after ends of abandoned piping have been closed. Use either procedure below:
 - 1. Close open ends of piping with at least 8-inch (203 mm) thick, brick masonry bulkheads.
 - 2. Close open ends of piping with threaded metal caps, plastic plugs, or other acceptable methods suitable for size and type of material being closed. Do not use wood plugs.
- B. Manholes and Structures Indicated to be Removed: Excavate around manholes and structures as required and use one procedure below:

1. Remove manhole or structure.
2. Remove top of manhole or structure down to at least 36 inches (915mm) below final grade. Fill to within 12 inches (300 mm) of top with stone, rubble, gravel, or compacted dirt. Fill to top with soil backfill.

C. Backfill to grade according to Section 312000 "Earth Moving".

3.6 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation where indicated.

1. Do not remove trees, shrubs, and other vegetation indicated to remain.
2. Grind down stumps and remove roots, obstructions, and debris to a depth of 18 inches below exposed subgrade.
3. Use only hand methods for grubbing within protection zones.
4. Chip removed tree branches and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.7 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 311000

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Excavating and backfilling trenches for utilities and pits for buried utility structures.
3. Section 311000 "Site Clearing" for removal of above- and below-grade improvements and utilities.

1.3 DEFINITIONS

- A. Backfill: Soil material used to fill an excavation.
- B. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- C. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
- D. Fill: Soil materials used to raise existing grades.
- E. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- F. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below topsoil materials.
- G. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct preexcavation conference at Project site.
 1. Review methods and procedures related to earthmoving, including, but not limited to, the following:

- a. Personnel and equipment needed to make progress and avoid delays.
- b. Coordination of Work with utility locator service.
- c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
- d. Extent of trenching by hand or with air spade.
- e. Field quality control.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
 1. Classification according to ASTM D 2487.
 2. Laboratory compaction curve according to ASTM D 698.

1.6 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.

1.7 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Utility Locator Service: Notify "Miss Utility" for area where Project is located before beginning earth-moving operations.
- C. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in Section 015000 "Temporary Facilities and Controls" and Section 311000 "Site Clearing" are in place.
- D. The following practices are prohibited within protection zones:
 1. Storage of construction materials, debris, or excavated material.
 2. Parking vehicles or equipment.
 3. Foot traffic.
 4. Erection of sheds or structures.
 5. Impoundment of water.
 6. Excavation or other digging unless otherwise indicated.
 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

- E. Do not direct vehicle or equipment exhaust towards protection zones.
- F. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, or a combination of these groups; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials replace with satisfactory soil materials.

3.5 EXCAVATION FOR SITE CLEARING

- A. Excavate as required to remove items indicated.
- B. Excavations at Edges of Tree- and Plant-Protection Zones:
 - 1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
 - 2. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.6 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.7 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Removing trash and debris.
 - 2. Removing temporary shoring, bracing, and sheeting.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.8 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.

- B. Backfill voids with satisfactory soil while removing shoring and bracing.
- C. Final Backfill:
 - 1. Soil Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.

3.9 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.10 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry density.

3.11 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than **8 inches (200 mm)** in loose depth for material compacted by heavy compaction equipment and not more than **4 inches (100 mm)** in loose depth for material compacted by hand-operated tampers.
- B. Compact soil materials to not less than the following percentages of maximum dry density according to ASTM D 698:
 - 1. Under turf or unpaved areas, scarify and recompact top **6 inches (150 mm)** below subgrade and compact each layer of backfill or fill soil material at 85 percent, or equal to adjacent soils whichever is greater.
 - 2. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.12 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Rough Grading: Slope grades to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
1. Turf or Unpaved Areas: Plus or minus **1 inch (25 mm)**.

3.13 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2937, and ASTM D 6938, as applicable. Tests will be performed at the following locations and frequencies:
1. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every **150 feet (46 m)** or less of trench length but no fewer than two tests.
 2. General Site Fill: At least 1 test for every 10,000 sq. ft.
- D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.14 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.15 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.
- B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.
 - 1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000

SECTION 329200 – TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Seeding.
 - 2. Sodding.
 - 3. Hydro-seeding
 - 4. Erosion-control material(s).

- B. Related Sections:

- 1. Division 31 Section "Site Clearing" for topsoil stripping and stockpiling.
 - 2. Division 31 Section "Earthwork" for excavation, filling and backfilling, and rough grading.

1.3 DEFINITIONS

- A. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
- B. Finish Grade: Elevation of finished surface of planting soil.
- C. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- D. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- E. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- F. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

- G. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.
- H. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- I. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.
- J. Landscaping Substantial Completion: Inspection by the City of Norfolk's - Department of Recreation, Parks, and Open Space, Division of Open Space Planning and Development, Landscape Architect to ensure that all work encompassing this specification section and the contract documents is satisfactory to the City of Norfolk. This inspection will precede the awarding of the project's substantial completion.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to this Project.
- B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 1. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.
- C. Qualification Data: For qualified landscape Installer.
- D. Product Certificates: For soil amendments and fertilizers, from manufacturer.
- E. Material Test Reports: For standardized ASTM D 5268 topsoil existing native surface topsoil existing in-place surface soil and imported or manufactured topsoil. Copies of all testing results shall be submitted to the City of Norfolk's Forester & Landscape Architect, and to the designated Public Works site inspector.
- F. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of turf and meadows during a calendar year. Submit before expiration of required initial maintenance periods.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: For all turf/seed restoration work within the Right-of-Way OR less than 2,500-SF, the grass turf/seed installer and their Field Supervisor are NOT required to hold the memberships and Certifications from ANLA and Certified Turfgrass Professionals.

- B. For all grass establishment work outside the Right-of-Way OR greater than 2,500-SF, the planting should be performed by a qualified landscape Installer whose work has resulted in successful turf and meadow establishment.
1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
 2. Experience: Five years' experience in turf installation in addition to requirements in Division 01 Section "Quality Requirements."
 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 4. Personnel Certifications: Installer's field supervisor personnel assigned to the Work shall have certification in one of the following categories from the Professional Landcare Network:
 - a. Certified Landscape Technician - Exterior, with installation maintenance irrigation specialty area(s), designated CLT-Exterior.
 - b. Certified Turfgrass Professional designated CTP.
 - c. Certified Turfgrass Professional of Cool Season Lawns, designated CTP-CSL.
 5. Pesticide Applicator: State licensed, commercial.
- C. Soil-Testing Laboratory Qualifications: An independent laboratory or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- D. Soil Analysis: For each unamended soil type, furnish soil analysis and a written report by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of the soil.
1. Testing methods and written recommendations shall comply with USDA's Handbook No. 60.
 2. The soil-testing laboratory shall be given soil sampling data, with depth, location, and number of samples taken to adequately represent each soil type on project site. A minimum of three representative samples shall be taken from varied locations for each soil to be used or amended for planting purposes.
 3. Report suitability of tested soil for turf growth.
 - a. Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated. State recommendations in weight per 1000 sq. ft. or volume per cu. yd. for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
 - b. Report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional recommendations for corrective action.
 4. If soil testing does not meet particle size distribution, physical and/or chemical properties specified; the soil shall be adjusted and re-tested, or another source secured, tested, and submitted for approval.
- E. Preinstallation Conference: Conduct conference at Project site; unless waived by all parties.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod in time for planting within 24 hours of harvesting. Protect sod from breakage and drying.
- C. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - 3. Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.

1.7 PROJECT CONDITIONS

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.
 - 1. Seed Planting:
 - a. Bermuda – Unhulled: September 1st – April 30th
 - b. Bermuda – Hulled: May 1st – August 30th
 - c. Fescue: September 15th – November 1st and April 1st – May 1st
 - d. Tidal Areas:
 - 2. Sod Installation/Planting: September 1st to April 30th at times when the ground temperature stays above 70 degrees Fahrenheit.
 - 3. Hydro-seeding: 'Savannah' Bermuda
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

1.8 MAINTENANCE SERVICE

- A. Initial Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than the following periods:
 - 1. Seeded Turf: 60 days from date of **Substantial Completion**.

- a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
2. Sodded Turf: 60 days from date of **Substantial Completion**.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: State-certified seed of grass species as follows:
- C. Seed Species: Seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed; refer to construction documents for appropriate seed type:
 1. Full Sun: Bermuda.
 - a. 100% 'Savannah' Bermuda
 2. Shade: Proportioned by weight as follows:
 - a. 50 percent chewings red fescue (*Festuca rubra* variety).
 - b. 35 percent rough bluegrass (*Poa trivialis*).
 - c. 15 percent redtop (*Agrostis alba*).
- D. Seed Species: Upon approval, alternate seeds maybe acceptable to match existing conditions of the site or adjacent sites:
 1. Submit request for approval of State-Certified alternate species.
 2. Submit seed manufacture's data on seed mix.

2.2 TURFGRASS SOD

- A. Turfgrass Sod: Certified Number 1 Quality/Premium, including limitations on thatch, weeds, diseases, nematodes, and insects, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.
- B. Turfgrass Species: Sod of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:
 1. Full Sun: Bermuda
 - a. Sun and Partial Shade: 'Savannah' Bermuda

2.3 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
 - 1. Class: T, with a minimum of 99 percent passing through No. 8 sieve and a minimum of 75 percent passing through No. 60 sieve.
 - 2. Class: O, with a minimum of 95 percent passing through No. 8 sieve and a minimum of 55 percent passing through No. 60 sieve.
 - 3. Provide lime in form of ground dolomitic limestone.
- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, and with a minimum of 99 percent passing through No. 6 sieve and a maximum of 10 percent passing through No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Aluminum Sulfate: Commercial grade, unadulterated.
- E. Perlite: Horticultural perlite, soil amendment grade.
- F. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 sieve.
- G. Sand: Clean, washed, natural or manufactured, and free of toxic materials.
- H. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.
- I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.4 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 - 1. Organic Matter Content: 50 to 60 percent of dry weight.
 - 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
- B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture, with a pH range of 3.4 to 4.8.
- C. Muck Peat: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, with a pH range of 6 to 7.5, and having a water-absorbing capacity of 1100 to 2000 percent.

- D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.
 - 1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with ammonium nitrate at a minimum rate of 0.15 lb/cu. ft. of loose sawdust or ground bark, or with ammonium sulfate at a minimum rate of 0.25 lb/cu. ft. of loose sawdust or ground bark.
- E. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.5 FERTILIZERS

- A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and 20 percent phosphoric acid.
- B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
- C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 - 1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
 - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.
- D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
 - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.6 PLANTING SOILS

- A. All soil mixing shall be performed at contractor's yard using appropriate soil mixing and shredding equipment of sufficient capacity to assure proper quality control. No mixing of soils shall occur at project location unless suitable portable equipment approved by the city forester & Landscape Architect is permitted. All soil testing shall be at the expense of the contractor.
- B. Planting Soil: ASTM D 5268 topsoil, with pH range of 5.5 to 7, a minimum of 6 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth. Mix ASTM D 5268 topsoil with the following soil amendments and fertilizers in the following quantities to produce planting soil:
 - 1. Soluble salt level: less than 844ppm.

2. Ratio of Loose Compost to Topsoil by Volume: 1:2.
 3. Ratio of Loose Sphagnum Peat to Topsoil by Volume: per soil test recommendations.
 4. Ratio of Loose Wood Derivatives to Topsoil by Volume: per soil test recommendations.
 5. Weight of Lime per 1000 Sq. Ft.: per soil test recommendations.
 6. Weight of Sulfur Iron Sulfate Aluminum Sulfate per 1000 Sq. Ft.: per soil test recommendations.
 7. Weight of Agricultural Gypsum per 1000 Sq. Ft.: per soil test recommendations.
 8. Volume of Sand Plus 10 Percent Diatomaceous Earth per 1000 Sq. Ft.: per soil test recommendations.
 9. Weight of Bonemeal per 1000 Sq. Ft.: per soil test recommendations.
 10. Weight of Superphosphate per 1000 Sq. Ft.: per soil test recommendations.
 11. Weight of Commercial Fertilizer per 1000 Sq. Ft.: per soil test recommendations.
 12. Weight of Slow-Release Fertilizer per 1000 Sq. Ft.: per soil test recommendations.
- C. Planting Soil: Existing, native surface topsoil formed under natural conditions with the duff layer retained during excavation process and stockpiled on-site. Verify suitability of native surface topsoil to produce viable planting soil. Clean soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
1. Supplement with another specified planting soil when quantities are insufficient.
 2. Mix existing, native surface topsoil with the following soil amendments and fertilizers in the following quantities to produce planting soil:
 - a. Ratio of Loose Compost to Topsoil by Volume: 1:2.
 - b. Ratio of Loose Sphagnum Peat to Topsoil by Volume: per soil test recommendations.
 - c. Ratio of Loose Wood Derivatives to Topsoil by Volume: per soil test recommendations.
 - d. Weight of Lime per 1000 Sq. Ft.: per soil test recommendations.
 - e. Weight of Sulfur Iron Sulfate Aluminum Sulfate per 1000 Sq. Ft.: per soil test recommendations.
 - f. Weight of Agricultural Gypsum per 1000 Sq. Ft.: per soil test recommendations.
 - g. Volume of Sand Plus 10 Percent Diatomaceous Earth per 1000 Sq. Ft.: per soil test recommendations.
 - h. Weight of Bonemeal per 1000 Sq. Ft.: per soil test recommendations.
 - i. Weight of Superphosphate per 1000 Sq. Ft.: per soil test recommendations.
 - j. Weight of Commercial Fertilizer per 1000 Sq. Ft.: per soil test recommendations.
 - k. Weight of Slow-Release Fertilizer per 1000 Sq. Ft.: per soil test recommendations.
- D. Planting Soil: Existing, in-place surface soil. Verify suitability of existing surface soil to produce viable planting soil. Remove stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth. Mix surface soil with the following soil amendments and fertilizers in the following quantities to produce planting soil:
1. Ratio of Loose Compost to Surface Soil by Volume: 1:2.
 2. Ratio of Loose Sphagnum Peat to Surface Soil by Volume: per soil test recommendations.
 3. Ratio of Loose Wood Derivatives to Surface Soil by Volume: per soil test recommendations.
 4. Weight of Lime per 1000 Sq. Ft.: per soil test recommendations.

5. Weight of Sulfur Iron Sulfate Aluminum Sulfate per 1000 Sq. Ft.: per soil test recommendations.
 6. Weight of Agricultural Gypsum per 1000 Sq. Ft.: per soil test recommendations.
 7. Volume of Sand Plus 10 Percent Diatomaceous Earth per 1000 Sq. Ft.: per soil test recommendations.
 8. Weight of Bonemeal per 1000 Sq. Ft.: per soil test recommendations.
 9. Weight of Superphosphate per 1000 Sq. Ft.: per soil test recommendations.
 10. Weight of Commercial Fertilizer per 1000 Sq. Ft.: per soil test recommendations.
 11. Weight of Slow-Release Fertilizer per 1000 Sq. Ft.: per soil test recommendations.
- E. Planting Soil: Imported topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.
1. Additional Properties of Imported Topsoil or Manufactured Topsoil: Screened and free of stones 1 inch or larger in any dimension; free of roots, plants, sod, clods, clay lumps, pockets of coarse sand, paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials harmful to plant growth; free of obnoxious weeds and invasive plants including quackgrass, Johnsongrass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, and brome grass; not infested with nematodes, grubs, other pests, pest eggs, or other undesirable organisms and disease-causing plant pathogens; friable and with sufficient structure to give good tilth and aeration. Continuous, air-filled, pore-space content on a volume/volume basis shall be at least 15 percent when moisture is present at field capacity. Soil shall have a field capacity of at least 15 percent on a dry weight basis.
 2. Mix imported topsoil or manufactured topsoil with the following soil amendments and fertilizers in the following quantities to produce planting soil:
 - a. Ratio of Loose Compost to Topsoil by Volume: 1:2 per soil test recommendations.
 - b. Ratio of Loose Sphagnum Peat to Topsoil by Volume: per soil test recommendations.
 - c. Ratio of Loose Wood Derivatives to Topsoil by Volume: per soil test recommendations.
 - d. Weight of Lime per 1000 Sq. Ft.: per soil test recommendations.
 - e. Weight of Sulfur Iron Sulfate Aluminum Sulfate per 1000 Sq. Ft.: per soil test recommendations.
 - f. Weight of Agricultural Gypsum per 1000 Sq. Ft.: per soil test recommendations.
 - g. Volume of Sand Plus 10 Percent Diatomaceous Earth per 1000 Sq. Ft.: per soil test recommendations.
 - h. Weight of Bonemeal per 1000 Sq. Ft.: per soil test recommendations.
 - i. Weight of Superphosphate per 1000 Sq. Ft.: per soil test recommendations.
 - j. Weight of Commercial Fertilizer per 1000 Sq. Ft.: per soil test recommendations.
 - k. Weight of Slow-Release Fertilizer per 1000 Sq. Ft.: per soil test recommendations.

2.7 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

2.8 PESTICIDES

- A. General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.9 EROSION-CONTROL MATERIALS

- A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.
- B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.
- C. Erosion-Control Mats: Cellular, non-biodegradable slope-stabilization mats designed to isolate and contain small areas of soil over steeply sloped surface, of 3-inch nominal mat thickness. Include manufacturer's recommended anchorage system for slope conditions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
 - 3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Owner and replace with new planting soil.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
 - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

- A. Limit turf subgrade preparation to areas to be planted.
- B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 8 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Apply superphosphate fertilizer directly to subgrade before loosening.
 - 2. Thoroughly blend planting soil off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil.
 - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer.
 - 3. Spread planting soil to a depth of 6 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
 - a. Spread approximately 1/2 the thickness of planting soil over loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil.
 - b. Reduce elevation of planting soil to allow for soil thickness of sod.
- C. Unchanged Subgrades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
 - 1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 - 2. Loosen surface soil to a depth of at least 6 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches of soil. Till soil to a homogeneous mixture of fine texture.
 - a. Apply superphosphate fertilizer directly to surface soil before loosening.
 - 3. Remove stones larger than 1 inch in any dimension and sticks, roots, trash, and other extraneous matter.
 - 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.

- D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.
- E. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- F. Before planting, obtain Owner's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 PREPARATION FOR EROSION-CONTROL MATERIALS

- A. Prepare area as specified in "Turf Area Preparation" Article.
- B. For erosion-control mats, install planting soil in two lifts, with second lift equal to thickness of erosion-control mats. Install erosion-control mat and fasten as recommended by material manufacturer.
- C. Fill cells of erosion-control mat with planting soil and compact before planting.
- D. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.
- E. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.5 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 1. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 2. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- B. Sow seed at a total rate of 8 lb/1000 sq. ft..
- C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes exceeding 1:4 with erosion-control blankets and 1:6 with erosion-control fiber mesh installed and stapled according to manufacturer's written instructions.
- E. Protect seeded areas with erosion-control mats where shown on Drawings; install and anchor according to manufacturer's written instructions.
- F. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.

1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.
 2. Bond straw mulch by spraying with asphalt emulsion at a rate of 10 to 13 gal./1000 sq. ft.. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.
- G. Protect seeded areas from hot, dry weather or drying winds by applying compost mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.

3.6 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
1. Mix slurry with nonasphaltic tackifier.
 2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 4000-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.
 3. Apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry coat at a rate so that mulch component is deposited at not less than 2000-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate. Apply slurry cover coat of fiber mulch (hydromulching) at a rate of 2000 lb/acre in opposing direction from the first application.

3.7 SODDING

- A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
1. Lay sod parallel to contour with staggered vertical joints for slopes exceeding 1:3. In areas where sod may be displaced by foot traffic during sodding operations, ladders or treaded planks shall be used.
 2. Anchor sod on slopes exceeding 1:6 with wood pegs that are at least 8" in length and have a cross-sectional area of approximately 1 square inch or steel staples, set flush with sod surface and spaced as required to adequately hold sod securely in place; but not less than 2 anchors per sod strip to prevent slippage. Special attention shall be given to anchoring sod placed in drainage ditches, channels, and swales.
- C. Sodded areas shall be rolled or tamped to press the root system of the sod into full contact with underlying soil.

- D. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.
- E. Sodded areas shall be kept watered to maintain the life and growth of the sod until final acceptance.

3.8 PLUGGING

- A. Plant plugs in holes or furrows, spaced 12 inches apart in both directions. On slopes, contour furrows to near level.

3.9 SPRIGGING

- A. Plant freshly shredded sod sprigs in furrows 1 to 1-1/2 inches deep. Place individual sprigs with roots and portions of stem in moistened soil, 6 inches apart in rows 10 inches apart, and fill furrows without covering growing tips. Lightly roll and firm soil around sprigs after planting.
- B. Broadcast sprigs uniformly over prepared surface at a rate of 10 cu. ft./1000 sq. ft. and mechanically force sprigs into lightly moistened soil.
 - 1. Spread a 1/4-inch- thick layer of compost mulch and planting soil on sprigs.
 - 2. Lightly roll and firm soil around sprigs after planting.
 - 3. Water sprigs immediately after planting and keep moist by frequent watering until well rooted.

3.10 TURF RENOVATION

- A. Renovate existing turf.
- B. Renovate existing turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
 - 1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
 - 2. Install new planting soil as required.
- C. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.
- D. Remove topsoil containing foreign materials such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.
- E. Mow, dethatch, core aerate, and rake existing turf.
- F. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- G. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.

- H. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.
- I. Apply soil amendments and initial fertilizers required for establishing new turf and mix thoroughly into top 4 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.
- J. Apply seed and protect with straw mulch and sod as required for new turf.
- K. Water newly planted areas and keep moist until new turf is established.

3.11 TURF MAINTENANCE

- A. Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and re-mulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
 - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
 - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 - 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from **contractor supplied sources** and to keep turf uniformly moist to a depth of 4 inches.
 - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 - 2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
 - 1. Mow Bermuda grass to a height of 1 1/2 to 2 inches.
 - 2. Mow Kentucky bluegrass, annual ryegrass and chewings red fescue to a height of 1 1/2 to 2 inches.
 - 3. Mow Fescue to a height of 3 – 3 1/2 inches.
- D. Turf Postfertilization: Apply fertilizer after initial mowing and when grass is dry.
 - 1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

3.12 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Owner:
 - 1. Satisfactory Turf: All turf must be installed and have been **maintained a minimum of 60 days** prior to acceptance.
 - 2. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
 - 3. Satisfactory Sodded Turf: At end of maintenance period, a healthy, **well-rooted**, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
 - 4. Satisfactory Plugged Turf: At end of maintenance period, the required number of plugs has been established as **well-rooted**, viable patches of grass, and areas between plugs are free of weeds and other undesirable vegetation.
 - 5. Satisfactory Sprigged Turf: At end of maintenance period, the required number of sprigs has been established as **well-rooted**, viable plants, and areas between sprigs are free of weeds and other undesirable vegetation.
- B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.13 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents in accordance with requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.14 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- C. Remove nondegradable erosion-control measures after grass establishment period and approval/release by Owner's Erosion and Sediment Control Inspector.

PART 4 - INSPECTION AND ACCEPTANCE

4.1 LANDSCAPE SUBSTANTIAL COMPLETION

- A. The contractor shall perform all necessary weeding, mowing and trimming, and shall replace sections larger than 1 square foot that are bare or otherwise damaged.
- B. City of Norfolk - Department of Recreation, Parks, and Open Space, Division of Open Space Planning and Development, Division of Open Space Planning and Development's Landscape Architect shall inspect all work and materials for the Landscape Substantial Completion upon written request by the Contractor. The request shall be received at least ten (10) calendar days before the anticipated date of inspection and sent to **City of Norfolk - Department of Recreation, Parks, and Open Space, Division of Open Space Planning and Development, Attention: City Landscape Architect.**
- C. Upon correction and/or replacement of all substandard work and materials by the Contractor, the Owner shall issue a **Project Certificate of Substantial Completion**. The responsibility for obtaining the overall **Project Certificate of Substantial Completion** rests with the Contractor. Progress payments may be withheld unless the Contractor obtains the **Project Certificate of Substantial Completion**.
- D. The work may be accepted in parts when it is deemed to be in the Owner's best interest to do so, and when written approval is given to the Contractor to incrementally complete the work. Acceptance and use of such areas by the Owner shall not waive any of the provisions of this Contract.

4.2 LANDSCAPE INSPECTION, GUARANTEE AND REPLACEMENT

- A. Landscape Inspection: Inspection of the work to determine its completion for beginning of the Landscape Guarantee and Maintenance Period will be made by the Owner upon request for such inspection submitted by the Contractor at least (10) days prior to the anticipated date. **ALL SEEDED AREAS MUST BE ALIVE AND HEALTHY.**
- B. After inspection, the Owner will notify the Contractor of the date of the beginning of the Landscape Guarantee and Maintenance Period by issuing a notice of Acceptance, or in the event of any deficiencies, of the requirements for beginning the Landscape Guarantee and Maintenance Period.
- C. Landscape Guarantee and Replacement: All seeded areas shall be guaranteed to be alive and healthy as determined by the Owner at the end of Guarantee and Maintenance Period. The Guarantee and Maintenance Period shall extend for a period of one (1) full calendar year from the date of Notice of Acceptance. The Contractor shall replace, in accordance with the drawings and specifications, any area that dies, or in the opinion of the Owner, is in an unhealthy or unsightly condition throughout the Guarantee and Maintenance Period.
- D. Re-seeding shall occur within the planting season following the death or rejection of any previously seeded areas. All costs incurred shall be borne by the Contractor. Seeding procedures shall comply with the requirements specified above. Newly seeded areas shall also be guaranteed

to remain alive and healthy for one (1) full calendar year from time of seeding. The Guarantee and Maintenance Period for replacement seed shall begin on the date of re-seeding.

- E. Inspections shall be made at the discretion of the owner during the Guarantee and Maintenance Period to determine that maintenance work is being performed in accordance with the Contract. The Contractor shall accompany the Owner on these inspections.

4.3 FINAL ACCEPTANCE

- A. At the end of the Guarantee and Maintenance Period the City of Norfolk – Department of Recreation, Parks, and Open Space, Division of Open Space Planning and Development's Landscape Architect shall inspect all guaranteed work for Final Acceptance upon written request of the Contractor. The request shall be received at least ten (10) calendar days before the anticipated date for Final Inspection and sent to City of Norfolk - Department of Recreation, Parks, and Open Space, Division of Open Space Planning and Development, Attention: Landscape Architect.
- B. If the Owner's inspection reveals that the Contractor has satisfactorily completed the requirements of all the contract documents, the Owner shall issue a Certificate of Final Acceptance.

END OF SECTION 329200

APPENDIX

HAZARDOUS MATERIALS INSPECTION

ASBESTOS ABATEMENT SPECIFICATION

LEAD IN CONSTRUCTION SPECIFICATION

HANDLING OF PCB BALLASTS, MERCURY LAMPS AND
THERMOSTATS SPECIFICATION

**APPLIED
LABORATORY
SERVICES**

HAZARDOUS MATERIALS INSPECTION

**FORMER
MEADOWBROOKE SCHOOL
7620 SHIRLAND AVENUE
NORFOLK, VIRGINIA**

Prepared For
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Bureau of Facility Maintenance
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Report Number: ALS 10808-15
April 29, 2015

Applied Laboratory Services, conducted a Hazardous Materials Inspection on March 31 through April 3, 2015 and additional sampling on April 22, 2015 for confirmation and delineation purposes of the former Meadowbrooke School located at 7620 Shirland Avenue Norfolk, Virginia in support of the future demolition activities.

This report was compiled by:


Paul D. Thomas

April 29, 2015
Date

VA. Asbestos Designer License #3305000966
VA. Asbestos Inspector License # 3303002215
VA. Asbestos Management Planner License # 3304001330
VA. Lead Designer License # 3357000198
VA. Lead inspector License #3355000025

If there are any questions concerning this report, or if we may be of further assistance to your office, please feel free to contact our office at (757) 623-0121.

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SUMMARY

ASBESTOS

The inspection included a visual assessment and representative bulk sampling of suspected asbestos containing materials. The original building was constructed circa 1918 (west portion of the building) and an addition was added circa 1954 (central to east portion of the building). The building consists of a single store main structure and two, 2-story wings. The building was constructed of block, concrete with partial areas of steel and wood structural framing. The roofs were a combination of flat built up roofs and sloped shingle roof areas. The 1954 portion of the building contained a crawlspace with utility trenches molded between the concrete slabs. The 1918 portion of the building was constructed on a concrete slab.

Asbestos suspected interior building materials included thermal system insulations, various diameter piping insulations, acoustical ceiling tiles, textured and smooth ceiling plasters, wallboard, HVAC Insulations, various flooring, cementitious boards, CMU wall coatings, various sealants, mastics and adhesives. Asbestos suspected exterior building materials included stucco wall coatings, window and door caulking/glazing, plaster overhangs, cementitious roof shingles, roof tars, insulations, coatings and sealants.

The inspection was performed by Commonwealth of Virginia Licensed Asbestos Inspector Mr. Paul D. Thomas. The purpose of the asbestos inspection was to identify and sample all suspected asbestos containing materials (ACM's). Assess and identify any of these materials, which are Asbestos Containing Materials. This inspection entailed the use of destructive sampling techniques; therefore all materials accessible by such techniques were inspected, tested and assessed. If during demolition activities suspect materials are encountered that were not previously assessed, materials should be tested for asbestos.

LEAD

Commonwealth of Virginia Licensed Lead Inspector Ms. Christina Haworth conducted a representative lead-based paint inspection testing accessible representative painted surfaces within the interior and exterior of the facility.

The lead-based paint inspection included an investigation of painted surfaces and components. Tested surfaces included various trims, walls, ceilings, window components, door components, mechanical equipment and all other accessible painted surfaces, also encompassing representative exterior components. The representative lead based paint inspection was conducted utilizing an X-ray Fluorescence (XRF) lead-measuring instrument. The inspection included the United States Environmental Protection Agency (EPA) guidelines specify a positive determination of lead in paint when the lead content is equal to or greater than 1.0 milligrams of lead per square centimeter of painted surface (mg/cm²) when measured by X-ray Fluorescence (XRF). Based on the approximate surface area of the deteriorated paint, the inspector assessed the condition as intact (good), fair, or poor.

The conditions of painted surfaces within the building were found to range from an intact condition to poor condition with significant delaminating paint at the time of the inspection.

POLYCHLORINATED BIPHENYLS (PCB)/MERCURY TUBES & THERMOSTATS

A visual inspection was conducted on site of accessible light fixture and thermostats within the building. All lighting fixtures manufactured prior to January of 1979 must be clearly marked as "Non-PCB" or otherwise be treated as PCB-containing fixtures. Mercury is typically present in fluorescent light bulbs and thermostats associated with HVAC systems.

As part of the inspection, light fixtures, fluorescent bulbs, and thermostats were tallied to create an inventory of potential PCB/Mercury containing materials. No bulk sampling of materials for PCB or Mercury took place as part of this aspect of the inspection.

UNDERGROUND STORAGE TANKS

Applied Laboratory Services LLC., sister company, Stokes Environmental Associates, LTD performed an investigation for the presence of underground storage tanks (UST's). Following the investigation no evidence of UST's were found on the property. A summary of the investigation may be located in the Appendix-D of this report.

ASBESTOS RESULTS SUMMARY

Friable Asbestos Containing Building Materials were identified following the asbestos inspection and PLM analysis of representative bulk samples of suspected asbestos containing materials. Friable asbestos was identified in interior textured ceiling plaster, various diameter piping insulations, exterior overhangs/canopies and exterior wall stucco. Friable asbestos containing materials were observed to contain conditions ranging from good to significantly damaged materials.

Non-friable Asbestos Containing Building Materials were identified during the representative asbestos inspection and PLM analysis of the representative bulk samples of suspected asbestos containing materials. Non-friable asbestos was identified in interior floor tile and associated mastic adhesives, sink mastic coatings, cementitious vent pipe, cementitious chalkboards, cove base adhesive, ceramic tile adhesive, and CMU Block filler. Exterior non-friable asbestos containing materials include cementitious roof shingles, canopy/overhang roof flashings and main roof perimeter, parapet and transition roof flashings. Non-friable asbestos containing materials were observed in good condition at the time of the inspection.

FRIABLE ASBESTOS CONTAINING MATERIAL LOCATIONS

Interior Textured Ceiling Plaster

The Friable Asbestos Containing Material was identified throughout the first and second floor areas within the 1918 portion of the building to include the Cafeteria, Corridors, classrooms, storage areas, clinic office and stairwells. Material in most instances is above acoustical ceiling tiles and was observed to intact and in good condition. Positive textured ceiling plaster was also identified within the Media Center/Library located in the 1954 section of the building. This materials was also observed to be intact and in good condition.

Various Diameter Pipe Insulations

The Friable Asbestos Containing Materials were identified within the 1918 portion of the building above the hard plaster ceilings within the kitchen, cafeteria and are expected to be within limited wall chase areas and above the foyer/corridor area. Materials were observed to be intact and in good condition at the time of the inspection. All piping insulation below ceiling areas were reported negative for asbestos following a review of available documents and verification bulk sampling/laboratory analysis.

Materials were identified within the East wing attic area of the 1954 portion of the building. Materials were observed to be intact and in good condition at the time of the inspection. All piping insulation below ceiling areas in the 1954 portion of the building were reported negative for asbestos following a review of available documents and verification bulk sampling/laboratory analysis.

Materials were identified within concrete trenches located under the 1954 portion of the building. Access to trenches were limited to exterior openings, the trenches are not accessible from within the crawlspace. Trenches appear to be located between poured concrete slab/footings. Observed insulation contained significant damage, soil surfaces were observed to have significant visual

evidence of asbestos contamination. (Note: The main central crawlspace and boiler room crawlspace appear have been abated and do not contain asbestos)

Exterior Overhangs/Canopies Textured Plaster

The Friable Asbestos Containing Material was identified on all exterior overhangs/canopy underside areas. Overhangs/Canopies are associated with the 1918 portion of the building. Material was observed to be intact and in good condition.

Exterior Wall Stucco/Wall Plaster

The Friable Asbestos Containing Material was identified on the 1918 portion of the building and is located exterior of the main foyer, the cafeteria, the kitchen, first and second floor areas of the West wing on the West, East and South sides of the wing. Material was observed to be in good condition with evidence of some delamination.

NON-FRIABLE ASBESTOS CONTAINING MATERIAL LOCATIONS

Floor Tiles and Associated Mastic Adhesive

Non-friable Asbestos Containing Floor Tiles and Associated Mastic Adhesives were identified throughout the 1918 and 1954 portions of the building. Following a review of available documents and verification bulk sampling/laboratory analysis some floor tiles were reported not to contain asbestos. Based on the inspection results positive asbestos flooring materials locations include the kitchen dry storage, 1st floor corridors 1, 2, 3 and 4. The 2nd floor East and West wing corridors, the three stairwells, classrooms #1, #2, #3, #4, #10, #11, #19, #22, #23, #25, #26, #27, #28, and #29. The 1st floor boy's and girl's restrooms, all large storage rooms and closets within classrooms, custodial closets, auditorium stage and the teachers lounge. Some materials are located under cabinets, book shelves and carpeted areas. Materials were observed to be intact and in good condition.

Flooring Mastic Adhesive Under Carpeted Areas and Sink Mastic

Non-friable Asbestos Containing Mastic Adhesives was identified within classroom #8 and the Library under glue applied carpeting. Sink mastic was identified associated with the underside coating of the sink within classroom #10. Materials were observed to be intact and in good condition.

Cementitious Vent Pipe

Non-friable Asbestos was identified in the Cementitious (Transite Type) vent pipe associated with the Hot Water Heater located in kitchen area. Material was observed to be in good condition at the time of the inspection.

Cementitious Chalkboards

Non-friable Asbestos was identified in the Cementitious (Transite Type) chalkboards located in classrooms #4, #21, #22, #23 and #24. Material was observed to be in good condition at the time of the inspection.

Cove Base Adhesive

Non-friable Asbestos Containing Adhesives was identified associated with cove base throughout the 1st and 2nd floor West wing and within the media center/library. Materials were observed to be intact and in good condition.

Ceramic Tile Adhesive

Non-friable Asbestos Containing Adhesive was identified associated with ceramic wall tiles throughout the 1954 portion of the building. Adhesive is located behind the wall tiles which are located in the 1st and 2nd floor corridors, bathrooms, locker rooms and the auditorium. Materials were observed to be intact and in good condition.

CMU Block filler

Non-friable Asbestos Containing Block Filler associated with CMU Block Walls was identified throughout the 1918 portion of the building within all corridors, classrooms, stairwells and the entryway within the media center/library. Materials were observed to be intact and in good condition.

Exterior Cementitious Roof (Transite) Shingles

Non-friable Asbestos was identified within exterior "Transite" roof shingles located on the two Southside entryways and at the Northeast Corner of the 1954 portion of the building. Materials were observed to be intact and in good condition.

Exterior Roof Flashing

Non-friable Asbestos was identified in the roofing tar/flashing located on the nine exterior canopies/overhangs. Asbestos was also identified in the bottom layer roof flashing associated with the Parapet Wall, the Roof Hatch, Perimeter Gravel Stop and 2nd floor Wall Transition associated with Roof Area "A" (refer to roof drawing), and the Parapet Wall bottom layer flashing located on Roof Area "B". No other roofing materials were identified to contain asbestos. Materials were observed to be intact and in good condition.

ALS recommends the removal of all ACM prior to commencement of any renovation or demolition activities. If, during demolition activities, previously unidentified materials are encountered, it is strongly advisable that materials are analyzed for asbestos prior to their disturbance. A list of asbestos containing and asbestos contaminated materials can be found in Table I of this report.

TABLE I

Sample #	Material/Description	Material/Location	Friability	%, Type Asbestos and Condition	Homog. Quantity
1	Textured Ceiling Plaster	Cafeteria	Friable	4% Chrysotile, Good	20,820sf
8	Mastic adhesive associated with floor tile	Kitchen Dry Storage, bottom layer	Non-Friable	5% Chrysotile, Good	144sf
11	2"-4" O.D. Pipe Insulation	Above Plaster Ceiling Kitchen & Cafeteria	Friable	35% Chrysotile, Localized Damaged	490lf
13	4"-6" O.D. Pipe Insulation	Above Plaster Ceiling Kitchen & Cafeteria	Friable	25% Chrysotile, 10% Amosite, Localized Damaged	720lf
14	Cementitious (Transite) Pipe	Water Heater Vent Pipe, Kitchen Utility Rm.	Non-Friable	15% Chrysotile, Good	6lf
19	Sink Mastic, white	Underside Sink Classroom #10	Non-Friable	5% Chrysotile, Good	16sf
23	Textured Ceiling Plaster	Above Drop Ceiling Corridor #4	Friable	2% Chrysotile, Good	Included in #1
27	9"x9" floor tile and associated mastic adhesive	Corridor #4, rooms #10, 11 and teachers lounge	Non-Friable	3% and 4% Chrysotile, Good	3,130sf
28	Decorative Trim Floor Tile and Associated Mastic	Corridor #4	Non-Friable	4% and 5% Chrysotile, Good	Included in #27
33	Mastic Adhesive associated red floor tile	Custodial Closet, Corridor #4	Non-Friable	2% Chrysotile, Good	155sf
34	Mastic Adhesive	Under Carpeting, Classroom #8	Non-Friable	3% Chrysotile, Good	660sf
35	Decorative Trim Floor Tile and Associated Mastic	Classroom #12	Non-Friable	5% Chrysotile, Good	Included in #27
39	Mastic Adhesive Associated With Covebase	Classroom #9 and throughout classrooms West Wing, 1 st and 2 nd floors	Non-Friable	5% Chrysotile, Good	1,260lf
41	Mastic Adhesive Associated with 12"x12" floor tile	Teachers Lounge	Non-Friable	2% Chrysotile, Good	500sf
49	9"x9" Floor Tile	Corridor #3 & Classrooms	Non-Friable	5% Chrysotile, Good	6,087sf
51	CMU Block Wall Filler	Corridor #3	Non-Friable	2% Chrysotile, Good	Approx. 14,840sf
52	Mastic Adhesive Associated with 12"x12" Floor Tile	Auditorium Stage	Non-Friable	5% Chrysotile, Good	600sf
66	Tar Paper/Vapor Barrier	2 nd Floor, Projection Rm., Auditorium, Exterior Wall	Non-Friable	<1% Anthophyllite	Not Quantified
75	9"x9" Floor Tile and Associated Mastic	Main Hall, Boys and Girls Restrooms	Non-Friable	5% Chrysotile, Good	1,850sf

Sample #	Material/Description	Material/Location	Friability	%, Type Asbestos and Condition	Homog. Quantity
N/A	12"x12" floor tile and associated mastic	Classrooms #1, #2, #3, #4 and East Stairwell	Non-Friable	Positive Based On Bldg. O&M	2,520sf
84	Mastic Adhesive, Yellow	Behind Ceramic Wall Tile, Main Corridor	Non-Friable	2% Chrysotile, Good	6,240sf
85	Mastic Adhesive	Under Carpeting, Media Center	Non-Friable	5% Chrysotile, Good	2,030sf
86	Textured Ceiling Plaster	Media Center	Friable	2% Chrysotile, Good	2,030sf
87	Mastic Adhesive Associated with Covebase	Media Center	Non-Friable	5% Chrysotile, Good	204lf
94	Cementitious (Transite) Chalkboard	Classroom #4	Non-Friable	15% Chrysotile, Good	60sf
106	Parapet Wall Flashing, Top Layer	Roof "A"	Non-Friable	10% Chrysotile, Good	365sf
107	Parapet Wall Flashing, Bottom Layer	Roof "A"	Non-Friable	5% Chrysotile, Good	365sf
112	Flashing, Bottom Layer	Roof Hatch, Roof "A"	Non-Friable	2% Chrysotile, Good	10lf
118	Perimeter Flashing, Bottom Layer	Roof "A" 2 nd Floor Transition	Non-Friable	10% Chrysotile, Good	206lf
122	Parapet Wall Flashing, Bottom Layer	Roof "B"	Non-Friable	5% Chrysotile, Good	1,945sf
162	Mastic Adhesive Associated with 12"x12" floor tile	2 nd Floor, east Stairwell	Non-Friable	5% Chrysotile, Good	144sf
163	9"x9" Floor Tile and Associated Mastic Adhesive	2 nd Floor, East Hallway	Non-Friable	3% and 5% Chrysotile, Good	3,850sf
165	9"x9" Floor Tile and Associated Mastic Adhesive	2 nd Floor, East Wing, Classroom #19, #22, #23, 5 Storage Rooms Within Classrooms and Corridor	Non-Friable	4% and 5% Chrysotile, Good	Included in #163
166	Cementitious (Transite) Chalkboard	Classroom #21	Non-Friable	20% Chrysotile, Good	400sf
176	6"-8" O.D. Pipe Insulation	Attic, East Wing	Friable	25% Chrysotile, Good	380lf
177	6"-8" O.D. Pipe, Mudded Elbow	Attic, East Wing	Friable	30% Chrysotile, Good	Included in #176
178	6"-8" O.D. Pipe Insulation	Attic, East Wing	Friable	25% Chrysotile, Good	Included in #176

Sample #	Material/ Description	Material/ Location	Friability	%, Type Asbestos and Condition	Homog. Quantity
179	6"-8" O.D. Pipe, Mudded Elbow	Attic, East Wing	Friable	30% Chrysotile, Good	Included in #176
180	2"-4" O.D. Pipe Insulation	Attic, East Wing	Friable	25% Chrysotile, Good	Included in #176
181	2"-4" O.D. Pipe, Mudded Elbow	Attic, East Wing	Friable	30% Chrysotile, Good	Included in #176
184	Perimeter Flashing	Exterior Entry Canopies/Overhangs (9 total)	Non-Friable	15% Chrysotile, Good	70lf
185	Textured Ceiling Plaster	Exterior Entry Canopy/Overhang (10 total)	Friable	2% Chrysotile, Good	365sf
186	Stucco/Plaster	Exterior Wall, West Side	Friable	2% Chrysotile, Good	8,612sf
198	Roof Shingle (Transite)	Exterior Lower Slopped Roof, North East Area (1 Northeast, 2 South Side)	Non-Friable	2% Chrysotile, Good	560sf
199	2"-4" O.D. Pipe Insulation	Northside Trench/Crawl Area	Friable	30% Chrysotile, <1% Crocidolite, Significant Damage	Approx. 1,056lf
N/A	Contaminated Soil	Pipe Trenches/Crawl Area	Friable	Chrysotile, and Crocidolite from Significant Damage pipe insulation	Approx. 2,112sf
R3	Stucco/Plaster	Exterior, Westside, West Wing	Friable	2% Chrysotile, Good	Included in #186
R5	Stucco/Plaster	Exterior, Northside, West Wing	Friable	2% Chrysotile, Good	Included in #186
R6	Stucco/Plaster	Exterior, Northside, West Wing	Friable	2% Chrysotile, Good	Included in #186
R7	Stucco/Plaster	Exterior, Northeast side, West Wing	Friable	2% Chrysotile, Good	Included in #186
R12	Stucco/Plaster	Exterior, Southside, West Wing	Friable	2% Chrysotile, Good	Included in #186
R13	Stucco/Plaster	Exterior, Eastside, West Wing	Friable	2% Chrysotile, Good	Included in #186
R14	Stucco/Plaster	Exterior, Eastside, West Wing	Friable	<1% Chrysotile, Good	Included in #186
R18	Adhesive, yellow	Main Corridor Behind Ceramic Wall Tile	Non-Friable	2% Chrysotile, Good	Included in #84
R19	Adhesive, yellow	Main Corridor Behind Ceramic Wall Tile	Non-Friable	2% Chrysotile, Good	Included in #84
R20	Adhesive, yellow	2 nd Floor East Wing Behind Ceramic Wall Tile	Non-Friable	2% Chrysotile, Good	Included in #84
R21	CMU Wall Block Filler	Corridor #4	Non-Friable	2% Chrysotile, Good	Included In #51
R22	CMU Wall Block Filler	Corridor #4	Non-Friable	2% Chrysotile, Good	Included In #51
R23	CMU Wall Block Filler	Classroom #12	Non-Friable	2% Chrysotile, Good	Included In #51

Sample #	Material/ Description	Material/ Location	Friability	%, Type Asbestos and Condition	Homog. Quantity
R24	CMU Wall Block Filler	Classroom #26, 2 nd Floor, West Wing	Non-Friable	2% Chrysotile, Good	Included In #51
R25	CMU Wall Block Filler	West Wing Stairwell	Non-Friable	2% Chrysotile, Good	Included In #51
R26	CMU Wall Block Filler	Cafeteria	Non-Friable	<1% Chrysotile, Good	800sf
R27	CMU Wall Block Filler	Cafeteria	Non-Friable	<1% Chrysotile, Good	Included in #R26
R28	CMU Wall Block Filler	West Wing, Foyer	Non-Friable	<1% Chrysotile, Good	Included In #51
R29	CMU Wall Block Filler	Library Entrance	Non-Friable	2% Chrysotile, Good	Included In #51

LEAD PAINT RESULTS SUMMARY

Painted surfaces ranged from an intact condition to poor condition with significant delaminating paint at the time of the inspection. Many painted surfaces have begun to delaminate, do to the building being unconditioned and a rise in moisture and humidity within the building.

Painted surfaces were inspected utilizing a Niton XL-306A X-Ray Fluorescence (XRF) Paint Analyzer to measure the lead content of surface coatings on representative homogenous building components on the interior and exterior of the property. A homogeneous component is a building material that is uniform in color, texture, and appears identical in every respect.

The sampling methodology for this survey was based on the EPA guidelines specify a positive determination of lead in paint when the lead content is equal to or greater than 1.0 milligrams of lead per square centimeter of painted surface (mg/cm^2) when measured by X-ray Fluorescence (XRF).

Following the inspection and testing of various representative surfaces, Lead-Based Paint (LBP) was identified within paint located on Interior Metal Doors and Metal Door Framing, Interior Ceramic Wall Tiles, Window Frames and Components within the Boiler Room, Metal Stairwell Components, Metal Radiators, Plaster Wall within Classroom #24, Exterior Metal Doors and Metal Door Frames, Exterior Wood Doors and Wood Door Frames and Exterior Metal Window Frames.

Other surfaces that did not contain lead-based paint contained lower levels of lead and are considered lead containing paints; the requirements of the OSHA Lead in Construction Standard, 29 CFR 1926.62 must be complied by all contractors disturbing painted surfaces, as OSHA does not have a minimum concentration reporting limit. Lead Paint Inspection data results are located within the appendices of this report

Lead waste must handled in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265. Disposal of debris must be conducted in accordance with all local, state and federal regulations. Prior to disposal of building materials contractors performing demolition activities must perform Toxicity Characteristics Leachate Procedure (TCLP) for Lead.

POLYCHLORINATED BIPHENYLS (PCB)/MERCURY TUBES & THERMOSTATS

The continued manufacture of lighting ballasts containing PCB's was banned by the US Environmental Protection Agency in 1979. All lighting fixtures manufactured prior to January of 1979 must be clearly marked as "Non-PCB" or be treated as PCB containing.

ALS estimated a combined total of **517 PCB light ballast** within the building. Fluorescent Light Tubes associated with each light fixture was assumed to contain Mercury, ALS estimated a combined total of **976 fluorescent light bulbs** in the building. A total of **28 Mercury Thermostats** were identified with the buildings. None of the materials were observed in poor condition or found to be leaking at the time of the inspection.

INSPECTION TECHNIQUES

The inspection was comprised of seven parts:

1. Reviewing the results of any previous investigations for ACM and inspecting building records which were made available for our evaluation.
2. Visual inspection of readily accessible spaces within the specified areas of the building. Documentation of physical description and location of suspect ACM.
3. Testing all specified surfaces for friability and determining the condition of suspect materials.
4. Sampling and documentation of observable suspect friable or non-friable materials by Environmental Protection Agency guidelines.
5. Recording assessment information.
6. Completing the appropriate laboratory analyses.
7. Preparing the report.

The results of the inspection are outlined in Appendixes of this report. Please note, in the absence of sample collection and analyses, OSHA's asbestos standard identifies some materials as being presumed asbestos-containing materials (PACM). PACM includes any thermal system insulation (TSI), any surfacing material, and any resilient flooring found in buildings constructed prior to 1980.

This inspection employed destructive sampling techniques; therefore, areas within the building that could be accessed by such sampling measures were evaluated. If, during demolition or renovation activities, suspect materials are encountered it is strongly advisable that said materials be analyzed for asbestos content prior to their disturbance. Due to being physically or visually inaccessible, the following areas were excluded from this inspection report:

1. The interior of mechanical equipment.
2. The interior of electrical equipment.
3. The interior of HVAC equipment.

ASBESTOS ANALYSIS AND LABORATORY INFORMATION

TESTING LABORATORIES

Applied Laboratory Services, L.L.C., participates and is proficient in the National Institute of Standards and Technology (NIST) Proficiency Test for bulk analysis. In addition to this program Applied Laboratory Services, L.L.C., requires that its laboratories compare their performance by polarized light microscopy (PLM) with that of other laboratories and maintains an in-house quality control/quality assurance program. The intra/interlaboratory programs serve to monitor all asbestos analysts and continually test their skills. In conjunction with that, ten percent of the bulk samples analyzed are to be reanalyzed monthly and statistical data maintained on the subsequent results, to include ratings of each analyst's performance. These samples shall be blind unknowns to the analyst, but their true compositions are known to other members of the laboratory in order to compare results.

QUALITATIVE ASSESSMENT METHOD

Samples are first viewed separately under a stereomicroscope for the presence of observable fibers. A portion of the sample is then mounted on a slide in a liquid of known refractive index. The analyst then utilizes optical properties and identification methods including, but not limited to, morphological characteristics, angles of extinction, sign of elongation, and dispersion staining colors to verify the presence/absence of asbestos.

QUANTITATIVE ASSESSMENT METHOD

The analyst expresses an estimate of fibrous and non-fibrous materials as an area percent of all material present. Since the distribution of material will not be homogenous on the slide, the analyst combines quantitative estimates from both the gross and microscopic examinations. This estimation method is in accordance with the Asbestos Hazard Emergency Response Act (AHERA) regulations (40 CFR Part 763) and has been successfully applied to the analysis of EPA Bulk Sample Analysis Quality Assurance Program samples.

LABORATORY RESULTS

The laboratory results of each sample can be obtained from the Appendices of this report. The analytical results form identifies the types of asbestos contained within a sample and the nature of other fibrous materials. These "other" material components include binders, fillers, and may include forms of asbestos other than chrysotile or amosite.

APPLICABLE ASBESTOS REGULATIONS

Asbestos presents a significant risk to human health as a result of air emissions from one or more sources. As such, it is considered a hazardous air pollutant and is subject to EPA regulations under the "National Emission Standards for Hazardous Air Pollutants" (NESHAP) which was promulgated as a result of Section 112 of the Clean Air Act (CAA).

The Asbestos NESHAP rule makes a distinction between an ACM that would readily release asbestos fibers when damaged or disturbed, described as "Friable", and an ACM that is unlikely to result in significant fiber release, described as "Non-friable". A dry, ACM that can be crumbled, pulverized, or reduced to powder by hand pressure is considered Friable. A Non-friable ACM cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Friable ACMs include TSI and surfacing materials which have been applied by spraying or trowling.

Non-friable ACMs can be further categorized as Category I or Category II. Category I Non-friable materials include any asbestos-containing packings, gaskets, resilient floor coverings or asphalt roofing products which contain more than 1 percent asbestos. Category II Non-friable materials include any asbestos-containing materials other than those listed as Category I.

Regulated Asbestos-Containing Material (RACM) is:

- Friable asbestos material,
- Category I non-friable ACM that has become friable,
- Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or
- Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the materials in the course of demolition or renovation operations.

The Occupational Safety and Health Administration (OSHA) have asbestos standards which protect the health of employees. Under these standards, the building/facility owner may be required to notify tenants, employees, or subcontractors of the presence, location, and quantity of ACM or PACM at the work sites in their buildings and facilities. In addition, the standards separate work involving asbestos into four (4) classes of activities. Each class is associated with increasing potential for exposures and is matched with increasingly stringent control requirements:

Class I Removal Activities involving TSI and/or Surfacing ACM.

Class II Removal Activities involving ACM which is neither TSI and/or Surfacing ACM. This includes, but is not limited to, materials such as flooring and roofing materials.

- Class III **Repair and Maintenance Activities**, where ACM (any type) may be disturbed.
- Class IV **Maintenance and Custodial Activities** during which employees contact ACM and/or in which the employee is required to clean up waste and debris containing ACM.

All Class I, II, and III asbestos work must be conducted within regulated areas. Each of these asbestos operations has engineering controls and work practices that are required. Different levels of respiratory protection and employee training are also required, dependent on the Class of activities.

Once a material has been identified as an ACM, recommendations are made based on the type of material and the condition of the material. The recommendations are based on the following table:

Table 1. Recommendations	
1.	Required and recommended removal methods for CLASS I removals, which involve Thermal Systems Insulation and/or Surfacing ACM/PACM, when inside of a building.
2.	Required and recommended removal methods for CLASS I removals, which involve Thermal Systems Insulation and/or Surfacing ACM/PACM, when outside of a building.
3.	Required and recommended removal methods for CLASS II removals. This involves ACM/PACM, which is neither Thermal Systems Insulation, and/or Surfacing ACM/PACM. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and built-up roofing.
4.	Recommended removal methods for Incidental Roofing Material, which is flashing. The material must not be sanded, abraded, or ground, but must be removed using manual methods that do not render the material friable. Otherwise, removal of material becomes a CLASS II activity.
5.	Required and recommended practices for CLASS IV activities such as Maintenance and Custodial operations. This includes demolition of in-place NESHAP Category I and II Non-friable materials in good condition, during which employees contact ACM/PACM and/or are required to clean up waste and debris containing ACM/PACM.
6.	NESHAP Category I or II non-friable ACM with a low probability of becoming crumbled, pulverized, or reduced to powder during demolition need not be removed. However, if the probability is high that the material will become crumbled, pulverized or reduced to powder during demolition, it must be considered "Regulated Asbestos Containing Material" (RACM) and is subject to Asbestos NESHAP. If the material is to be sanded, ground, cut or abraded during demolition the material is also considered "RACM" and is subject to the Asbestos NESHAP ¹

¹ U.S. Environmental Protection Agency. National Emission Standards for Hazardous Air Pollutants (NESHAP), Asbestos Regulations. 40 CFR Part 61, Subpart M, November 20, 1990.

7. Required and recommended practices for CLASS III activities such as Repair and Maintenance operations. This includes operations where the ACM, including TSI and surfacing ACM/PACM, may be disturbed. Maintenance activities that disrupt the matrix of ACM or PACM, or generate visible debris from ACM or PACM are classified as CLASS III.
8. OSHA no longer regulates ACM cements, coatings, and mastics. These materials, if demolished in place, or removed substantially intact, are also NOT regulated by NESHAPS, and can be handled as construction debris but can not be recycled or crushed.

The following work practices should be followed whenever demolition/renovation activities involving RACM occur (State regulations may require more stringent actions or reporting.):

- Notify EPA of intention to demolish/renovate,
- Remove all RACM from a facility being demolished or renovated before any disruptive activity begins or before access to the material is precluded,
- Keep RACM adequately wet before, during, and after removal operation,
- Conduct demolition/renovation activities in a manner which produces no visible emissions to the outside air, and
- Handle and dispose of all RACM in an approved manner.

APPLICABLE LEAD PAINT REGULATIONS

Lead is a prevalent toxic substance associated with certain paints, various types of piping, some soils and dusts (particularly around the perimeter of houses/buildings and within one mile of major roadways), vicinity of railroad tracks, pesticide application areas, industrial facilities, gasoline stations, and other media found in the vicinity of the subject site.

A number of regulations govern lead-based paint activities. In 1977 the Consumer Product Safety Commission, acting under the authority of the Consumer Product Safety Act, banned the sale of "lead-based paints" (coatings with lead content of greater than 0.06%, per CPSC definition) to consumers and banned the use of such paints where consumers may have direct access to painted surfaces (households, schools, recreation areas, toys, furniture, etc.). The Uniform Statewide Building Code (USBC) of the Code of Virginia requires proper management of lead-based paint in dwellings, dwelling units, and childcare facilities, including fences and outbuildings. The Federal Lead-based Paint Hazard Reduction Act of 1992 provides that, commencing 28 October 1995, no contract for the sale or lease of pre-1978 housing is binding on the purchaser or lessee unless the seller or lessor provides a copy of an EPA-prepared lead hazard pamphlet, discloses any known presence of lead-based paint and provides the purchaser with a 10-day period in which to conduct a risk assessment or lead inspection. The Act also requires specific language that must be included and countersigned in the contract of sale or the lease.

In addition to the above regulations which mostly concern residential exposure, OSHA regulations control construction activities involving lead from paint (including paint with less than 0.5% lead content) and other lead-containing materials, in residential, commercial, or industrial situations.

Available studies indicate that dust is the most important lead transmission vehicle and risk factor. Lead-contaminated dust can be generated in large quantities during renovation projects, even at locations where paint contains less than 0.5% lead. Therefore, it is advisable that renovation projects that disturb painted surfaces should be conducted under the assumption that lead is present in paint at the site.

BUILDING INSPECTION DISCLAIMER & ENDORSEMENTS

Applied Laboratory Services, L.L.C., is pleased to assist The City of Norfolk with the hazardous materials building inspection at the subject property outlined in this report. This report has been prepared for the exclusive use of The City of Norfolk and their agents for specific application to the property assessed. This work has been performed using reasonable care within the scope of work and in accordance with budgetary limitations. Applied Laboratory Services, L.L.C., strives to conduct services in keeping with regulatory boundaries, industry standards and in accordance with generally accepted industrial hygiene practice. No other warranty, expressed or implied, is made.

Our conclusions and recommendations are based upon our observations at the site, any reviewed documentation, test results, interviews, other information provided and our previous experience. The information contained in this document is based on physical inspections conducted by Applied Laboratory Services, L.L.C. We certify that our findings with regard to the presence or absence of visible and physically accessible asbestos is based on our inspection and the laboratory analysis of bulk samples taken during the inspection, unless otherwise noted in the report. All specified sampling areas which are reported to contain no asbestos have been inspected and, based on the inspection and analysis of suspect materials encountered or other reviews as described in this report were found to contain no ACM.

Applied Laboratory Services, L.L.C., has analyzed the information obtained in this audit in keeping with existing guidelines and regulations, but cannot accurately predict what actions or interpretations any given agency may take presently, or what standards and practices may apply to the site in the future. Should such variations in regulations, guidelines or site conditions become apparent in the future, it will be necessary to reevaluate our conclusions and recommendations based upon additional analyses and on-site observations as appropriate. The pricing for this work is based on the absence of personal liability of the preparers with respect to the work, and the understanding that any claim associated with the work shall look solely to Applied Laboratory Services, L.L.C.

Applied Laboratory Services, L.L.C., acknowledges that it maintained in full force and effect at the time the services described in the inspection were performed, professional liability (errors and omissions) insurance with minimum policy limits of one million dollars each occurrence and one million dollars in the aggregate. Applied Laboratory Services, L.L.C., currently maintains such insurance in full force and effect and currently has no plan to terminate such insurance in the foreseeable future. Applied Laboratory Services, L.L.C.'s liability in connection with this inspection shall cease after a period of three years from the date of completion of the study, and Applied Laboratory Services' total aggregate liability in connection with the inspection shall not exceed that amount actually covered by insurances on any such claim.

Please note that no environmental investigation can wholly eliminate uncertainty regarding the potential for adverse environmental conditions in connection with a property. This study is intended to reduce, but not eliminate, such uncertainty. The investigation recognizes reasonable limits of time and cost, and is designed to provide an appropriate level of inquiry, based on existing industry standards.

APPENDICES

APPENDIX A - ASBESTOS ANALYTICAL RESULTS

APPLIED LABORATORY SERVICES

Commonwealth of Virginia Asbestos
Analytical Laboratory # 3333000153
NVLAP Lab # 200515-0

Certificate of Analysis

Analysis of Bulk Building Materials by Polarized Light Microscopy Techniques
EPA Test Method (EPA/600/R-93/116)

ALS Account: 01-163
Customer: ALS Consulting
4101 Granby Street
Norfolk, VA 23504

P O:
TAT: ALS Standard

LIMS ID: ALS-2015-47592
Project Name: "Former" Meadowbrooke
ProjectNo: 10808
Location: 7620 Shirland Ave
Samples Received: 4/1/2015
Date Analyzed: 4/10/2015

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47592-1 1	1 Yes	3/31/2015 White Fibrous/Granular Textured Plaster	Cafeteria, Top Coat	91% NON FIBROUS MATERIAL	1% SYNTHETIC FIBER 4% CELLULOSE FIBER	4% CHRYSOTILE
47592-1 2	1 Yes	3/31/2015 White Fibrous Insulation	Cafeteria, Top Coat	70% NON FIBROUS MATERIAL	30% CELLULOSE FIBER	None Detected
Sample analyzed as individual layers.						
47592-2 1	2 No	3/31/2015 White Fibrous Insulation-Like Material	Cafeteria, Base Coat	70% NON FIBROUS MATERIAL	30% CELLULOSE FIBER	None Detected
47592-3 1	3 Yes	3/31/2015 White Granular 12X12 Floor Tile	Cafeteria	100% NON FIBROUS MATERIAL		None Detected
47592-3 2	3 Yes	3/31/2015 Yellow Adhesive Mastic	Cafeteria	99% NON FIBROUS MATERIAL	1% CELLULOSE FIBER	None Detected
Sample analyzed as individual layers.						
47592-4 1	4 No	3/31/2015 Orange & White Cementitious Terrazzo	Kitchen	100% NON FIBROUS MATERIAL		None Detected
47592-5 1	5 No	3/31/2015 Red & White Fibrous/Granular Jacket	Radiator, Cafeteria	30% NON FIBROUS MATERIAL	70% FIBROUS GLASS	None Detected
47592-5 2	5 Yes	3/31/2015 White Fibrous Insulation	Radiator, Cafeteria	70% NON FIBROUS MATERIAL	30% CELLULOSE FIBER	None Detected
Sample analyzed as individual layers.						
47592-6 1	6 No	3/31/2015 Beige Fibrous/Granular Jacket	Radiator, Cafeteria	30% NON FIBROUS MATERIAL	70% CELLULOSE FIBER	None Detected

Lab ID	Cust. ID	Sample Date	Sample Location		Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description					
47592-6	6	3/31/2015	Radiator, Cafeteria	60%	NON FIBROUS MATERIAL	10% SYNTHETIC FIBER 30% CELLULOSE FIBER	None Detected
2	Yes	White Fibrous Insulation					
Sample analyzed as individual layers.							
47592-7	7	3/31/2015	Kitchen, Dry Storage	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	White Granular 12X12 Floor Tile					
47592-7	7	3/31/2015	Kitchen, Dry Storage	99%	NON FIBROUS MATERIAL	1% CELLULOSE FIBER	None Detected
2	Yes	Yellow Adhesive Mastic					
Sample analyzed as individual layers.							
47592-8	8	3/31/2015	Kitchen, Dry Storage	98%	NON FIBROUS MATERIAL	2% CELLULOSE FIBER	None Detected
1	Yes	White Granular Floor Tile					
47592-8	8	3/31/2015	Kitchen, Dry Storage	95%	NON FIBROUS MATERIAL		5% CHRYSOTILE
2	Yes	Black Adhesive Mastic					
Sample analyzed as individual layers.							
47592-9	9	3/31/2015	Kitchen	2%	MICA		None Detected
1	Yes	Beige Granular Plaster		98%	NON FIBROUS MATERIAL		
47592-10	10	3/31/2015	Kitchen	2%	MICA		None Detected
1	Yes	Beige Granular Plaster		98%	NON FIBROUS MATERIAL		
47592-11	11	3/31/2015	Overhead, Kitchen	20%	NON FIBROUS MATERIAL	45% CELLULOSE FIBER	35% CHRYSOTILE
1	No	White Fibrous Jacket & Insulation					
Unable to separate layers.							
47592-12	12	3/31/2015	Overhead, Kitchen	2%	NON FIBROUS MATERIAL	98% CELLULOSE FIBER	None Detected
1	Yes	Beige Fibrous Jacket					
47592-12	12	3/31/2015	Overhead, Kitchen	75%	NON FIBROUS MATERIAL	25% FIBROUS GLASS	None Detected
2	Yes	Beige Fibrous/Granular Insulation					
Sample analyzed as individual layers.							
47592-13	13	3/31/2015	Overhead, Kitchen	65%	NON FIBROUS MATERIAL		25% CHRYSOTILE 10% AMOSITE
1	Yes	White Fibrous Insulation					
47592-14	14	3/31/2015	Water Heat Vent, Kitchen	85%	NON FIBROUS MATERIAL		15% CHRYSOTILE
1	Yes	Beige Fibrous/Cementitious Pipe					
47592-15	15	3/31/2015	Overhead, Cafeteria	20%	NON FIBROUS MATERIAL	80% FIBROUS GLASS	None Detected
1	Yes	Grey Fibrous Jacket					
47592-15	15	3/31/2015	Overhead, Cafeteria	2%	NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Grey Fibrous Insulation					
Sample analyzed as individual layers.							

Lab ID	Cust. ID	Sample Date	Sample Location		Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description					
47592-16	16	3/31/2015	Overhead, Cafeteria	2%	NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
1	Yes	Yellow Fibrous Insulation					
47592-17	17	3/31/2015	Decorative Windows, Kitchen	100%	NON FIBROUS MATERIAL		None Detected
1	No	Beige Granular Glazing					
47592-18	18	3/31/2015	Cafeteria	100%	NON FIBROUS MATERIAL		None Detected
1	No	Beige & White Granular Surfacing Material					
47592-18	18	3/31/2015	Cafeteria	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Grey Cementitious Concrete					
Sample analyzed as individual layers.							
47592-19	19	3/31/2015	Classroom #10	95%	NON FIBROUS MATERIAL		5% CHRYSOTILE
1	Yes	White Adhesive Mastic					
47592-20	20	3/31/2015	Classroom #10	100%	NON FIBROUS MATERIAL		None Detected
1	No	White Pliable Caulking					
47592-21	21	3/31/2015	Classroom #13	100%	NON FIBROUS MATERIAL		None Detected
1	No	White Pliable Caulking					
47592-22	22	3/31/2015	Corridor #4	50%	NON FIBROUS MATERIAL	10% FIBROUS GLASS 40% CELLULOSE FIBER	None Detected
1	No	Beige & White Fibrous/Granular 2X4 Ceiling Tile					
47592-23	23	3/31/2015	Above Drop Ct., Corridor #4	73%	NON FIBROUS MATERIAL	25% CELLULOSE FIBER	2% CHRYSOTILE
1	Yes	White Fibrous Textured Plaster					
47592-24	24	3/31/2015	Classroom #9	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	White Granular Textured Plaster					
47592-24	24	3/31/2015	Classroom #9	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Beige Granular Scratch Coat					
Sample analyzed as individual layers.							
47592-25	25	3/31/2015	Clinic	50%	NON FIBROUS MATERIAL	10% FIBROUS GLASS 40% CELLULOSE FIBER	None Detected
1	No	Beige & White Fibrous/Granular 2X4 Ceiling Tile					
47592-26	26	3/31/2015	Overhead, Clinic	40% METAL FOIL 10% NON FIBROUS MATERIAL		10% FIBROUS GLASS 40% CELLULOSE FIBER	None Detected
1	No	Brown & Grey Fibrous/Granular Jacket					

Lab ID	Cust. ID	Sample Date	Sample Location		Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description					
47592-26	26	3/31/2015	Overhead, Clinic	2%	NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation					
Sample analyzed as individual layers.							
47592-27	27	3/31/2015	Corridor, #4	96%	NON FIBROUS MATERIAL		4% CHRYSOTILE
1	Yes	Brown Granular 9X9 Floor Tile					
47592-27	27	3/31/2015	Corridor, #4	97%	NON FIBROUS MATERIAL		3% CHRYSOTILE
2	Yes	Black Adhesive Mastic					
Sample analyzed as individual layers.							
47592-28	28	3/31/2015	Corridor, #4	96%	NON FIBROUS MATERIAL		4% CHRYSOTILE
1	Yes	Brown Granular Floor Tile					
47592-28	28	3/31/2015	Corridor, #4	95%	NON FIBROUS MATERIAL		5% CHRYSOTILE
2	Yes	Black Adhesive Mastic					
Sample analyzed as individual layers.							
47592-29	29	3/31/2015	Corridor, #4	5%	NON FIBROUS MATERIAL	95% CELLULOSE FIBER	None Detected
1	No	Brown & White Fibrous/Granular Fiber Board					
47592-29	29	3/31/2015	Corridor, #4	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Brown Adhesive Mastic					
Sample analyzed as individual layers.							
47592-30	30	3/31/2015	Behind Corkboard, Corridor #4	99%	NON FIBROUS MATERIAL	1% CELLULOSE FIBER	None Detected
1	Yes	Beige Granular Scratch Coat					
47592-31	31	3/31/2015	Classroom #10	5%	NON FIBROUS MATERIAL	95% CELLULOSE FIBER	None Detected
1	No	Beige & White Fibrous/Granular Fiber Board					
47592-31	31	3/31/2015	Classroom #10	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Brown Adhesive Mastic					
Sample analyzed as individual layers.							
47592-32	32	3/31/2015	Behind Corkboard, Classroom #10	98%	NON FIBROUS MATERIAL	1% SYNTHETIC FIBER 1% CELLULOSE FIBER	None Detected
1	Yes	Beige Granular Scratch Coat					
47592-33	33	3/31/2015	Custodial Closet	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	Red Granular Floor Tile					
47592-33	33	3/31/2015	Custodial Closet	96%	NON FIBROUS MATERIAL	2% CELLULOSE FIBER	2% CHRYSOTILE
2	Yes	Yellow Adhesive Mastic					
Sample analyzed as individual layers.							

Lab ID	Cust. ID	Sample Date	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description				
47592-34	34	3/31/2015	Under Carpet, Classroom #8	100% NON FIBROUS MATERIAL		<1% CHRYSOTILE
1	Yes	Beige Granular Flooring Material				
< 1% = trace.						
47592-34	34	3/31/2015	Under Carpet, Classroom #8	95% NON FIBROUS MATERIAL	2% CELLULOSE FIBER	3% CHRYSOTILE
2	Yes	Black Adhesive Mastic				
Sample analyzed as individual layers.						
47592-35	35	3/31/2015	Classroom #12	98% NON FIBROUS MATERIAL	1% SYNTHETIC FIBER 1% CELLULOSE FIBER	None Detected
1	Yes	Yellow Adhesive Mastic				
47592-35	35	3/31/2015	Classroom #12	97% NON FIBROUS MATERIAL		3% CHRYSOTILE
2	Yes	Brown Granular Floor Tile				
Sample analyzed as individual layers.						
47592-35	35	3/31/2015	Classroom #12	94% NON FIBROUS MATERIAL	1% CELLULOSE FIBER	5% CHRYSOTILE
3	Yes	Black Adhesive Mastic				
Sample analyzed as individual layers.						
47592-36	36	3/31/2015	Principal Office	100% NON FIBROUS MATERIAL		None Detected
1	Yes	White Granular Plaster				
47592-36	36	3/31/2015	Principal Office	90% NON FIBROUS MATERIAL	10% CELLULOSE FIBER	None Detected
2	No	Beige & White Fibrous/Granular Wallboard				
Sample analyzed as individual layers.						
47592-37	37	3/31/2015	Principal Office	100% NON FIBROUS MATERIAL		None Detected
1	Yes	White Granular Plaster				
47592-37	37	3/31/2015	Principal Office	90% NON FIBROUS MATERIAL	10% CELLULOSE FIBER	None Detected
2	No	Beige & White Fibrous/Granular Wallboard				
Sample analyzed as individual layers.						
47592-38	38	3/31/2015	Closet/Overhead, Classroom #9	2% NON FIBROUS MATERIAL	98% CELLULOSE FIBER	None Detected
1	Yes	Brown Fibrous Vapor Barrier				
47592-39	39	3/31/2015	Classroom #9	100% NON FIBROUS MATERIAL		None Detected
1	No	Black & Grey Pliable Cove Base				
47592-39	39	3/31/2015	Classroom #9	100% NON FIBROUS MATERIAL		None Detected
2	Yes	White Adhesive Mastic				
Sample analyzed as individual layers.						
47592-39	39	3/31/2015	Classroom #9	93% NON FIBROUS MATERIAL	2% CELLULOSE FIBER	5% CHRYSOTILE
3	No	Black Granular/Adhesive Mastic				
Sample analyzed as individual layers.						

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47592-40 1	40 Yes	3/31/2015 White Granular 12X12 Floor Tile	Clinic	100% NON FIBROUS MATERIAL		None Detected
47592-40 2	40 Yes	3/31/2015 Brown Adhesive Mastic	Clinic	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47592-41 1	41 Yes	3/31/2015 Beige Granular 12X12 Floor Tile	Teacher's Lounge	99% NON FIBROUS MATERIAL	1% CELLULOSE FIBER	None Detected
47592-41 2	41 Yes	3/31/2015 Yellow Adhesive Mastic	Teacher's Lounge	93% NON FIBROUS MATERIAL	5% CELLULOSE FIBER 2% POLYETHYLENE	None Detected
Sample analyzed as individual layers.						
47592-41 3	41 Yes	3/31/2015 Black Adhesive Mastic	Teacher's Lounge	97% NON FIBROUS MATERIAL	1% CELLULOSE FIBER	2% CHRYSOTILE
Sample analyzed as individual layers.						
47592-42 1	42 No	3/31/2015 Beige & White Fibrous/Granular Fiber Board	Corridor #3	5% NON FIBROUS MATERIAL	95% CELLULOSE FIBER	None Detected
47592-42 2	42 Yes	3/31/2015 Brown Adhesive Mastic	Corridor #3	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47592-43 1	43 Yes	3/31/2015 Beige Granular Scratch Coat	Under Corkboard, Corridor #3	98% NON FIBROUS MATERIAL	1% SYNTHETIC FIBER 1% CELLULOSE FIBER	None Detected
47592-44 1	44 No	3/31/2015 Brown & White Fibrous/Granular 1X1 Ceiling Tile	Classroom #29	5% NON FIBROUS MATERIAL	95% CELLULOSE FIBER	None Detected
47592-44 2	44 Yes	3/31/2015 Brown Adhesive Mastic	Classroom #29	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47592-45 1	45 No	3/31/2015 Brown & White Fibrous/Granular 1X1 Ceiling Tile	Classroom #29	5% NON FIBROUS MATERIAL	95% CELLULOSE FIBER	None Detected
47592-45 2	45 Yes	3/31/2015 Brown Adhesive Mastic	Classroom #29	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47592-46 1	46 No	3/31/2015 Beige & White Fibrous/Granular Jacket	Classroom #28 @ Radiators	25% NON FIBROUS MATERIAL	75% FIBROUS GLASS	None Detected

Lab ID	Cust. ID	Sample Date	Sample Location		Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description					
47592-46	46	3/31/2015	Classroom #28 @ Radiators	75%	NON FIBROUS MATERIAL	25% SYNTHETIC FIBER	None Detected
2	Yes	Blue Fibrous/Granular Insulation					
Sample analyzed as individual layers.							
47592-47	47	3/31/2015	Classroom #28 @ Radiators	25%	NON FIBROUS MATERIAL	75% FIBROUS GLASS	None Detected
1	No	White & Black Fibrous/Granular Jacket					
47592-47	47	3/31/2015	Classroom #28 @ Radiators	75%	NON FIBROUS MATERIAL	25% SYNTHETIC FIBER	None Detected
2	Yes	Blue Fibrous/Granular Insulation					
Sample analyzed as individual layers.							
47592-48	48	3/31/2015	Classroom #28, Closet	10%	NON FIBROUS MATERIAL	10% FIBROUS GLASS	None Detected
1	No	Beige & White Fibrous/Granular Jacket		40%	METAL FOIL	40% CELLULOSE FIBER	
47592-48	48	3/31/2015	Classroom #28, Closet	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Black Adhesive Mastic					
Sample analyzed as individual layers.							
47592-48	48	3/31/2015	Classroom #28, Closet	2%	NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
3	Yes	Yellow Fibrous Insulation					
Sample analyzed as individual layers.							
47592-49	49	3/31/2015	Corridor #3	95%	NON FIBROUS MATERIAL		5% CHRYSOTILE
1	Yes	Brown Granular 9X9 Floor Tile					
47592-49	49	3/31/2015	Corridor #3	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Black Adhesive Mastic					
Sample analyzed as individual layers.							
47592-50	50	3/31/2015	Corridor #3	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	Beige Granular 12x12 Floor Tile					
47592-50	50	3/31/2015	Corridor #3	98%	NON FIBROUS MATERIAL	2% CELLULOSE FIBER	None Detected
2	Yes	Yellow Adhesive Mastic					
Sample analyzed as individual layers.							
47592-51	51	3/31/2015	Corridor #3	98%	NON FIBROUS MATERIAL		2% CHRYSOTILE
1	Yes	Green Granular Surfacing Material					
47592-51	51	3/31/2015	Corridor #3	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Grey Cementitious Concrete					
Sample analyzed as individual layers.							

Lab ID Cust. ID Sample Date Sample Location
Layer Homogenous Description

Non Fibrous

Non Asbestos Fibers

Asbestos Fibers

Analyst: Kim Mantey

NIST Signatory: K. Mantey, Senior Microscopist

Date Released: 4/13/2015

This Certificate of Analysis presents analytical data covered by this laboratory's accreditation under the National Voluntary Laboratory Accreditation Program (NVLAP). Detection, identification, and quantification of asbestos in certain building materials (e.g., floor tiles, caulk, asphalts, roofing materials) by PLM is difficult due to interfering matrix components. PLM technique has an estimated detection limit of 1% (v:v). Fibers smaller than 0.25 um cannot be detected; hence, correlative techniques should be considered for data verification. Non-detection of asbestos in certain materials should be verified by analytical electron microscopy techniques (refer to AHERA criteria). Quantifications are estimated by calibrated visual estimate, unless otherwise noted. The estimated measurement of uncertainty in PLM analysis is available upon request. The data reported herein relates only to those samples analyzed. This report shall not be reproduced, except in full, without the written permission of senior managers of this laboratory. This report shall not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

APPLIED LABORATORY SERVICES

Commonwealth of Virginia Asbestos
Analytical Laboratory # 3333000153
NVLAP Lab # 200515-0

Certificate of Analysis

Analysis of Bulk Building Materials by Polarized Light Microscopy Techniques
EPA Test Method (EPA/600/R-93/116)

ALS Account: 01-163
Customer: ALS Consulting
4101 Granby Street
Norfolk, VA 23504

P O:
TAT: ALS Standard

LIMS ID: ALS-2015-47617
Project Name: "Former" Meadowbrooke
ProjectNo: 10808
Location: 7620 Shirland Ave, Norfolk
Samples Received: 4/1/2015
Date Analyzed: 4/13/2015

Lab ID	Cust. ID	Sample Date	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description				
47617-1	52	4/1/2015	Auditorium Stage	100% NON FIBROUS MATERIAL		None Detected
1	Yes	Beige Granular 12X12 Floor Tile				
47617-1	52	4/1/2015	Auditorium Stage	95% NON FIBROUS MATERIAL		5% CHRYSOTILE
2	Yes	Black Adhesive Mastic				
Sample analyzed as individual layers.						
47617-2	53	4/1/2015	Auditorium Seating Area	100% NON FIBROUS MATERIAL		None Detected
1	Yes	White Granular 12X12 Floor Tile				
47617-2	53	4/1/2015	Auditorium Seating Area	100% NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Adhesive Mastic				
Sample analyzed as individual layers.						
47617-3	54	4/1/2015	Auditorium Stage	40% METAL FOIL 10% NON FIBROUS MATERIAL	10% FIBROUS GLASS 40% CELLULOSE FIBER	None Detected
1	No	White & Grey Fibrous/Granular Jacket				
47617-3	54	4/1/2015	Auditorium Stage	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				
Sample analyzed as individual layers.						
47617-4	55	4/1/2015	Auditorium Stage	100% NON FIBROUS MATERIAL		None Detected
1	Yes	White Granular Plaster				
47617-4	55	4/1/2015	Auditorium Stage	99% NON FIBROUS MATERIAL	1% CELLULOSE FIBER	None Detected
2	Yes	Beige Granular Scratch Coat				
Sample analyzed as individual layers.						

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47617-5	56	4/1/2015	Auditorium Seating Area	75% NON FIBROUS MATERIAL	25% CELLULOSE FIBER	None Detected
1	Yes	Grey, White, & Beige Fibrous/Granular Tectum Board				
47617-6	57	4/1/2015	Auditorium Seating Area	75% NON FIBROUS MATERIAL	25% CELLULOSE FIBER	None Detected
1	No	Grey, White, & Beige Fibrous/Granular Tectum Board				
47617-7	58	4/1/2015	Auditorium Seating Area	75% NON FIBROUS MATERIAL	25% CELLULOSE FIBER	None Detected
1	No	Beige, White, & Grey Fibrous/Granular Tectum Board				
47617-8	59	4/1/2015	Stage	90% NON FIBROUS MATERIAL	10% SYNTHETIC FIBER	None Detected
1	Yes	Black Fibrous/Pliable Stair Tread				
47617-8	59	4/1/2015	Stage	100% NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Adhesive Mastic				
Sample analyzed as individual layers.						
47617-9	60	4/1/2015	Auditorium Seating & Hallways	100% NON FIBROUS MATERIAL		None Detected
1	No	Black & Grey Pliable Cove Base				
47617-9	60	4/1/2015	Auditorium Seating & Hallways	100% NON FIBROUS MATERIAL		None Detected
2	Yes	White Adhesive Mastic				
Sample analyzed as individual layers.						
47617-10	61	4/1/2015	Auditorium Side Entrances	100% NON FIBROUS MATERIAL		None Detected
1	No	Black & Grey Pliable Ramp Tread				
47617-10	61	4/1/2015	Auditorium Side Entrances	100% NON FIBROUS MATERIAL		None Detected
2	Yes	White Adhesive Mastic				
Sample analyzed as individual layers.						
47617-11	62	4/1/2015	Auditorium Foyer	100% NON FIBROUS MATERIAL		None Detected
1	Yes	Grey Cementitious Baseboard				
47617-12	63	4/1/2015	Stage Area	2% NON FIBROUS MATERIAL	98% CELLULOSE FIBER	None Detected
1	Yes	Red Fibrous Curtain				
47617-13	64	4/1/2015	Stage Area	2% NON FIBROUS MATERIAL	98% CELLULOSE FIBER	None Detected
1	Yes	Beige Fibrous Curtain				

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47617-14 1	65 Yes	4/1/2015 White Granular Plaster	Staircase to Projection	100% NON FIBROUS MATERIAL		None Detected
47617-14 2	65 Yes	4/1/2015 Beige Granular Scratch Coat	Staircase to Projection	99% NON FIBROUS MATERIAL	1% CELLULOSE FIBER	None Detected
Sample analyzed as individual layers.						
47617-14 3	65 No	4/1/2015 Beige & White Fibrous/Granular Wallboard	Staircase to Projection	90% NON FIBROUS MATERIAL	10% CELLULOSE FIBER	None Detected
Sample analyzed as individual layers.						
47617-15 1	66 No	4/1/2015 Black Fibrous/Granular Vapor Barrier	Ext. Wall/Auditorium Foyer	40% NON FIBROUS MATERIAL	60% FIBROUS GLASS	<1% ANTHOPHYLLITE
< 1% = trace.						
47617-16 1	67 No	4/1/2015 White Fibrous Fiber Board	CR #6	5% NON FIBROUS MATERIAL	95% CELLULOSE FIBER	None Detected
47617-17 1	68 Yes	4/1/2015 White Granular 12X12 Floor Tile	CR #6	100% NON FIBROUS MATERIAL		None Detected
47617-17 2	68 Yes	4/1/2015 Yellow Adhesive Mastic	CR #6	95% NON FIBROUS MATERIAL	5% CELLULOSE FIBER	None Detected
Sample analyzed as individual layers.						
47617-18 1	69 Yes	4/1/2015 Beige & White Granular/Pliable Corkboard	CR #6	100% NON FIBROUS MATERIAL		None Detected
47617-18 2	69 Yes	4/1/2015 Beige Fibrous Cloth	CR #6	2% NON FIBROUS MATERIAL	98% CELLULOSE FIBER	None Detected
Sample analyzed as individual layers.						
47617-18 3	69 Yes	4/1/2015 Brown Adhesive Mastic	CR #6	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47617-18 4	69 Yes	4/1/2015 Beige Fibrous Paper	CR #6	2% NON FIBROUS MATERIAL	98% CELLULOSE FIBER	None Detected
Sample analyzed as individual layers.						
47617-19 1	70 Yes	4/1/2015 White Granular Plaster	CR #6	100% NON FIBROUS MATERIAL		None Detected
47617-19 2	70 Yes	4/1/2015 Beige Granular Scratch Coat	CR #6	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						

Lab ID	Cust. ID	Sample Date	Sample Location		Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47617-20	71	4/1/2015	Main Hall, Lower Sec. Pipe	25%	NON FIBROUS MATERIAL	75% FIBROUS GLASS	None Detected
1	No	Red & White Fibrous/Granular Jacket					
47617-20	71	4/1/2015	Main Hall, Lower Sec. Pipe	65%	NON FIBROUS MATERIAL	10% SYNTHETIC FIBER 25% CELLULOSE FIBER	None Detected
2	Yes	White Fibrous Insulation					
Sample analyzed as individual layers.							
47617-21	72	4/1/2015	Main Hall, Lower Pipe Sec.	25%	NON FIBROUS MATERIAL	75% FIBROUS GLASS	None Detected
1	No	Red & White Fibrous/Granular Jacket					
47617-21	72	4/1/2015	Main Hall, Lower Pipe Sec.	65%	NON FIBROUS MATERIAL	10% SYNTHETIC FIBER 25% CELLULOSE FIBER	None Detected
2	Yes	White Fibrous Insulation					
Sample analyzed as individual layers.							
47617-22	73	4/1/2015	Main Hall, Upper Pipe Sec.	30% 15%	METAL FOIL NON FIBROUS MATERIAL	10% FIBROUS GLASS 45% CELLULOSE FIBER	None Detected
1	No	Grey & White Fibrous/Granular Jacket					
47617-22	73	4/1/2015	Main Hall, Upper Pipe Sec.	2%	NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation					
Sample analyzed as individual layers.							
47617-23	74	4/1/2015	Main Hall, Upper Pipe Sec.	40% 10%	METAL FOIL NON FIBROUS MATERIAL	10% FIBROUS GLASS 40% CELLULOSE FIBER	None Detected
1	No	Beige & White Fibrous/Granular Jacket					
47617-23	74	4/1/2015	Main Hall, Upper Pipe Sec.	2%	NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation					
Sample analyzed as individual layers.							
47617-24	75	4/1/2015	Main Hall	95%	NON FIBROUS MATERIAL		5% CHRYSOTILE
1	Yes	Beige Granular 9X9 Floor Tile					
47617-24	75	4/1/2015	Main Hall	93%	NON FIBROUS MATERIAL	2% CELLULOSE FIBER	5% CHRYSOTILE
2	Yes	Black Adhesive Mastic					
Sample analyzed as individual layers.							
47617-25	76	4/1/2015	Main Hall Outside Rm 7	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	White Granular Plaster					
47617-26	77	4/1/2015	Main Hall Outside Girls Locker	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	White Granular Plaster					

Lab ID	Cust. ID	Sample Date	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description				
47617-27	78	4/1/2015	Main Hall	100% NON FIBROUS MATERIAL		None Detected
1	No	Black & Grey Cementitious Base Board				
47617-28	79	4/1/2015	Crawlspace Under Main Corridor	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
1	Yes	Yellow Fibrous Insulation				
47617-29	80	4/1/2015	Crawlspace Under Main Corridor	40% METAL FOIL 10% NON FIBROUS MATERIAL	10% FIBROUS GLASS 40% CELLULOSE FIBER	None Detected
1	No	Beige & Grey Fibrous/Granular Jacket				
47617-29	80	4/1/2015	Crawlspace Under Main Corridor	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				
Sample analyzed as individual layers.						
47617-30	81	4/1/2015	Crawlspace Under Main Corridor	40% METAL FOIL 10% NON FIBROUS MATERIAL	10% FIBROUS GLASS 40% CELLULOSE FIBER	None Detected
1	No	Beige & Grey Fibrous/Granular Jacket				
47617-30	81	4/1/2015	Crawlspace Under Main Corridor	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				
Sample analyzed as individual layers.						
47617-31	82	4/1/2015	Crawlspace Under Main Corridor	40% METAL FOIL 10% NON FIBROUS MATERIAL	10% FIBROUS GLASS 40% CELLULOSE FIBER	None Detected
1	No	Beige & Grey Fibrous/Granular Jacket				
47617-31	82	4/1/2015	Crawlspace Under Main Corridor	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				
Sample analyzed as individual layers.						
47617-32	83	4/1/2015	Crawlspace Under Main Corridor	10% METAL FOIL 20% NON FIBROUS MATERIAL	10% FIBROUS GLASS 60% CELLULOSE FIBER	None Detected
1	No	Beige & Grey Fibrous/Granular Jacket				
47617-32	83	4/1/2015	Crawlspace Under Main Corridor	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				
Sample analyzed as individual layers.						
47617-33	84	4/1/2015	Associated w/ Ceramic Tile, Main Corridor	100% NON FIBROUS MATERIAL		None Detected
1	Yes	White Cementitious Ceramic Tile				

Lab ID	Cust. ID	Sample Date	Sample Location		Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description					
47617-33	84	4/1/2015	Associated w/ Ceramic Tile, Main Corridor	98%	NON FIBROUS MATERIAL		2% CHRYSOTILE
2	Yes	Yellow Adhesive Mastic					
Sample analyzed as individual layers.							
47617-34	85	4/1/2015	Media Center	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	Yellow Adhesive Mastic					
47617-34	85	4/1/2015	Media Center	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Beige Granular Flooring Material					
Sample analyzed as individual layers.							
47617-34	85	4/1/2015	Media Center	95%	NON FIBROUS MATERIAL		5% CHRYSOTILE
3	Yes	Black Adhesive Mastic					
Sample analyzed as individual layers.							
47617-35	86	4/1/2015	Media Center	58%	NON FIBROUS MATERIAL	40% CELLULOSE FIBER	2% CHRYSOTILE
1	Yes	White Fibrous Textured Plaster					
47617-36	87	4/1/2015	Media Center	100%	NON FIBROUS MATERIAL		None Detected
1	No	Black & Grey Pliable Cove Base					
47617-36	87	4/1/2015	Media Center	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Adhesive Mastic					
Sample analyzed as individual layers.							
47617-36	87	4/1/2015	Media Center	95%	NON FIBROUS MATERIAL		5% CHRYSOTILE
3	Yes	Black Adhesive Mastic					
Sample analyzed as individual layers.							
47617-37	88	4/1/2015	Girls Locker Room	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	White Granular Plaster					
47617-37	88	4/1/2015	Girls Locker Room	88%	NON FIBROUS MATERIAL	2% FIBROUS GLASS 10% CELLULOSE FIBER	None Detected
2	No	Beige & White Fibrous/Granular Drywall					
Sample analyzed as individual layers.							
47617-38	89	4/1/2015	Boys Restroom	45%	NON FIBROUS MATERIAL	10% FIBROUS GLASS 45% CELLULOSE FIBER	None Detected
1	No	Beige & White Fibrous/Granular 2X4 Ceiling Tile					
47617-39	90	4/1/2015	Boys Restroom	25%	NON FIBROUS MATERIAL	75% FIBROUS GLASS	None Detected
1	No	Beige Fibrous/Granular Jacket					
47617-39	90	4/1/2015	Boys Restroom	75%	NON FIBROUS MATERIAL	25% SYNTHETIC FIBER	None Detected
2	Yes	White Fibrous Insulation					
Sample analyzed as individual layers.							

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47617-40 1	91 Yes	4/1/2015 Beige Fibrous Cloth	Main Corridor	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
47617-40 2	91 Yes	4/1/2015 White Fibrous Insulation	Main Corridor	70% NON FIBROUS MATERIAL	30% CELLULOSE FIBER	None Detected
Sample analyzed as individual layers.						
47617-41 1	92 Yes	4/1/2015 Yellow Adhesive Mastic	East End Office, Under Carpet	98% NON FIBROUS MATERIAL	2% SYNTHETIC FIBER	None Detected
47617-41 2	92 Yes	4/1/2015 Beige Granular 12X12 Floor Tile	East End Office, Under Carpet	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47617-41 3	92 Yes	4/1/2015 Black Adhesive Mastic	East End Office, Under Carpet	95% NON FIBROUS MATERIAL	5% CELLULOSE FIBER	None Detected
Sample analyzed as individual layers.						
47617-42 1	93 Yes	4/1/2015 Grey Cementitious Chalkboard	Classroom 2, Behind Corkboard	100% NON FIBROUS MATERIAL		None Detected
47617-43 1	94 No	4/1/2015 Grey Fibrous/Cementitious Transite Chalkboard	Classroom 4	85% NON FIBROUS MATERIAL		15% CHRYSOTILE
47617-43 2	94 Yes	4/1/2015 Brown Adhesive Mastic	Classroom 4	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47617-44 1	95 No	4/1/2015 Beige & White Fibrous/Granular 2X4 Ceiling Tile	Classroom 3	45% NON FIBROUS MATERIAL	10% FIBROUS GLASS 45% CELLULOSE FIBER	None Detected
47617-45 1	96 No	4/1/2015 Yellow & White Fibrous/Pliable 2X4 Ceiling Tile	Classroom 2	5% NON FIBROUS MATERIAL	95% FIBROUS GLASS	None Detected
47617-46 1	97 No	4/1/2015 Beige & White Fibrous/Granular 2X2 Ceiling Tile	Elevator Foyer, East End	45% NON FIBROUS MATERIAL	10% FIBROUS GLASS 45% CELLULOSE FIBER	None Detected
47617-47 1	98 Yes	4/1/2015 White Granular Plaster	Girls Restroom	100% NON FIBROUS MATERIAL		None Detected

Lab ID	Cust. ID	Sample Date	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47617-47	98	4/1/2015	Girls Restroom	97% NON FIBROUS MATERIAL	1% ANIMAL HAIR 1% SYNTHETIC FIBER 1% CELLULOSE FIBER	None Detected

2 Yes Beige Fibrous/Granular Scratch Coat

Sample analyzed as individual layers.

Analyst: Kim Mantey

NIST Signatory: K. Mantey, Senior Microscopist

Date Released: 4/14/2015

This Certificate of Analysis presents analytical data covered by this laboratory's accreditation under the National Voluntary Laboratory Accreditation Program (NVLAP). Detection, identification, and quantification of asbestos in certain building materials (e.g., floor tiles, caulk, asphalts, roofing materials) by PLM is difficult due to interfering matrix components. PLM technique has an estimated detection limit of 1% (v.v). Fibers smaller than 0.25 um cannot be detected; hence, correlative techniques should be considered for data verification. Non-detection of asbestos in certain materials should be verified by analytical electron microscopy techniques (refer to AHERA criteria). Quantifications are estimated by calibrated visual estimate, unless otherwise noted. The estimated measurement of uncertainty in PLM analysis is available upon request. The data reported herein relates only to those samples analyzed. This report shall not be reproduced, except in full, without the written permission of senior managers of this laboratory. This report shall not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

APPLIED LABORATORY SERVICES

Commonwealth of Virginia Asbestos
Analytical Laboratory # 3333000153
NVLAP Lab # 200515-0

Certificate of Analysis

Analysis of Bulk Building Materials by Polarized Light Microscopy Techniques
EPA Test Method (EPA/600/R-93/116)

ALS Account: 01-163
Customer: ALS Consulting
4101 Granby Street
Norfolk, VA 23504

P O:
TAT: ALS Standard

LIMS ID: ALS-2015-47642
Project Name: "Former" Meadowbrooke
ProjectNo: 10808
Location: 7620 Shirland Ave, Norfolk
Samples Received: 4/3/2015
Date Analyzed: 4/16/2015

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47642-1	99	4/2/2015	Roof A	100% NON FIBROUS MATERIAL		None Detected
1	No	Gray & White Pliable/Granular Rubbery Material				
47642-1	99	4/2/2015	Roof A	100% NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam				
Sample analyzed as individual layers.						
47642-2	100	4/2/2015	Roof A	85% NON FIBROUS MATERIAL	15% CELLULOSE FIBER	None Detected
1	Yes	Black Fibrous/Adhesive Tar				
47642-3	101	4/2/2015	Roof A	100% NON FIBROUS MATERIAL		None Detected
1	No	Gray Pliable/Granular Rubbery Material				
47642-3	101	4/2/2015	Roof A	100% NON FIBROUS MATERIAL		None Detected
27	Yes	Yellow Foam				
Sample analyzed as individual layers.						
47642-4	102	4/2/2015	Roof A	75% NON FIBROUS MATERIAL	25% CELLULOSE FIBER	None Detected
1	Yes	Black Fibrous/Adhesive Tar				
47642-5	103	4/2/2015	Roof A , Second Floor	100% NON FIBROUS MATERIAL		None Detected
1	Yes	White Granular Glazing				
47642-6	104	4/2/2015	Roof A	100% NON FIBROUS MATERIAL		None Detected
1	No	Gray & White Pliable/Granular Rubbery Material				

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47642-6 2	104 Yes	4/2/2015 Yellow Foam	Roof A	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47642-7 1	105 Yes	4/2/2015 Black Fibrous/Adhesive Tar	Roof A	75% NON FIBROUS MATERIAL	25% CELLULOSE FIBER	None Detected
47642-8 1	106 No	4/2/2015 Gray & White Pliable/Granular Rubbery Material	Roof A	100% NON FIBROUS MATERIAL		None Detected
47642-8 2	106 Yes	4/2/2015 White Foam	Roof A	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47642-8 3	106 Yes	4/2/2015 Black Adhesive Tar	Roof A	90% NON FIBROUS MATERIAL		10% CHRYSOTILE
Sample analyzed as individual layers.						
47642-9 1	107 Yes	4/2/2015 Black Adhesive Tar	Roof A	80% NON FIBROUS MATERIAL	15% CELLULOSE FIBER	5% CHRYSOTILE
47642-9 2	107 Yes	4/2/2015 White Foam	Roof A	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47642-10 1	108 No	4/2/2015 Gray & White Pliable/Granular Rubbery Material	Roof A	100% NON FIBROUS MATERIAL		None Detected
47642-10 2	108 Yes	4/2/2015 Yellow Foam	Roof A	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47642-11 1	109 Yes	4/2/2015 Black Adhesive Tar	Roof A	75% NON FIBROUS MATERIAL	25% CELLULOSE FIBER	None Detected
47642-11 2	109 Yes	4/2/2015 Yellow Foam	Roof A	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47642-12 1	110 Yes	4/2/2015 Gray Pliable/Granular Rubbery Material	Roof A	100% NON FIBROUS MATERIAL		None Detected
47642-12 2	110 Yes	4/2/2015 Yellow Foam	Roof A	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						

Lab ID	Cust. ID	Sample Date	Sample Location		Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description					
47642-13	111	4/2/2015	Roof A	100%	NON FIBROUS MATERIAL		None Detected
1	No	Gray Pliable/Granular Rubbery Material					
47642-13	111	4/2/2015	Roof A	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam					
Sample analyzed as individual layers.							
47642-14	112	4/2/2015	Roof A	96%	NON FIBROUS MATERIAL	2% CELLULOSE FIBER	2% CHRYSOTILE
1	Yes	Gray Granular Silver Coat					
47642-14	112	4/2/2015	Roof A	90%	NON FIBROUS MATERIAL		10% CHRYSOTILE
2	Yes	Black Adhesive Tar					
Sample analyzed as individual layers.							
47642-15	113	4/2/2015	Roof B	100%	NON FIBROUS MATERIAL		None Detected
1	No	Gray & White Pliable/Granular Rubbery Material					
47642-15	113	4/2/2015	Roof B	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam					
Sample analyzed as individual layers.							
47642-15	113	4/2/2015	Roof B	100%	NON FIBROUS MATERIAL		None Detected
3	Yes	Black Adhesive Tar					
Sample analyzed as individual layers.							
47642-16	114	4/2/2015	Roof B	60%	NON FIBROUS MATERIAL	40% CELLULOSE FIBER	None Detected
1	Yes	Black Fibrous/Adhesive Tar					
47642-16	114	4/2/2015	Roof B	2%	NON FIBROUS MATERIAL	98% CELLULOSE FIBER	None Detected
2	Yes	Beige Fibrous Insulation					
Sample analyzed as individual layers.							
47642-17	115	4/2/2015	Roof B	100%	NON FIBROUS MATERIAL		None Detected
1	No	Gray & White Pliable/Granular Rubbery Material					
47642-17	115	4/2/2015	Roof B	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam					
Sample analyzed as individual layers.							
47642-18	116	4/2/2015	Roof B	90%	NON FIBROUS MATERIAL	10% CELLULOSE FIBER	None Detected
1	Yes	Black Adhesive Tar					
47642-19	117	4/2/2015	Roof B	100%	NON FIBROUS MATERIAL		None Detected
1	No	Gray & White Pliable/Granular Rubbery Material					

Lab ID	Cust. ID	Sample Date	Sample Location		Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description					
47642-19	117	4/2/2015	Roof B	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam					
Sample analyzed as individual layers.							
47642-20	118	4/2/2015	Roof B	90%	NON FIBROUS MATERIAL		10% CHRYSOTILE
1	Yes	Black Adhesive Tar					
47642-21	119	4/2/2015	Roof B	100%	NON FIBROUS MATERIAL		None Detected
1	No	Gray & White Pliable/Granular Rubbery Material					
47642-21	119	4/2/2015	Roof B	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam					
Sample analyzed as individual layers.							
47642-22	120	4/2/2015	Roof B	80%	NON FIBROUS MATERIAL	20% CELLULOSE FIBER	None Detected
1	Yes	Black Fibrous/Adhesive Tar					
47642-23	121	4/2/2015	Roof B	100%	NON FIBROUS MATERIAL		None Detected
1	No	Grey & White Granular/Pliable Rubbery Material					
47642-23	121	4/2/2015	Roof B	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam					
Sample analyzed as individual layers.							
47642-24	122	4/2/2015	Roof B	90%	NON FIBROUS MATERIAL	5% FIBROUS GLASS	5% CHRYSOTILE
1	Yes	Black Adhesive Tar					
47642-25	123	4/2/2015	Roof C	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	Grey Cementitious Shingle					
47642-26	124	4/2/2015	Roof C	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	Grey Cementitious Shingle					
47642-27	125	4/2/2015	Roof D	100%	NON FIBROUS MATERIAL		None Detected
1	No	Grey & White Granular/Pliable Rubbery Material					
47642-27	125	4/2/2015	Roof D	100%	NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam					
Sample analyzed as individual layers.							
47642-28	126	4/2/2015	Roof D	80%	NON FIBROUS MATERIAL	10% FIBROUS GLASS 10% CELLULOSE FIBER	None Detected
1	Yes	Black Fibrous/Adhesive Tar					

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47642-28	126	4/2/2015	Roof D	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				
Sample analyzed as individual layers.						
47642-28	126	4/2/2015	Roof D	100% NON FIBROUS MATERIAL		None Detected
3	Yes	White Foam				
Sample analyzed as individual layers.						
47642-29	127	4/2/2015	Roof D	100% NON FIBROUS MATERIAL		None Detected
1	No	Grey & White Granular/Pliable Rubbery Material				
47642-29	127	4/2/2015	Roof D	100% NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam				
Sample analyzed as individual layers.						
47642-30	128	4/2/2015	Roof D	20% NON FIBROUS MATERIAL	80% CELLULOSE FIBER	None Detected
1	Yes	Black Fibrous/Adhesive Tar Paper				
47642-31	129	4/2/2015	Roof D	10% METAL FOIL 60% NON FIBROUS MATERIAL	10% FIBROUS GLASS 10% POLYETHYLENE 10% CELLULOSE FIBER	None Detected
1	No	Grey & White Granular/Pliable Jacket & Mastic				
47642-31	129	4/2/2015	Roof D	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				
Sample analyzed as individual layers.						
47642-32	130	4/2/2015	Roof D	100% NON FIBROUS MATERIAL		None Detected
1	No	Grey & White Granular/Pliable Rubbery Material				
47642-32	130	4/2/2015	Roof D	100% NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam				
Sample analyzed as individual layers.						
47642-32	130	4/2/2015	Roof D	100% NON FIBROUS MATERIAL		None Detected
3	Yes	Black Pliable Rubbery Material				
Sample analyzed as individual layers.						
47642-32	130	4/2/2015	Roof D	2% NON FIBROUS MATERIAL	98% CELLULOSE FIBER	None Detected
4	Yes	Beige Fibrous Insulation				
Sample analyzed as individual layers.						
47642-33	131	4/2/2015	Roof D	100% NON FIBROUS MATERIAL		None Detected
1	No	Grey & White Granular/Pliable Rubbery Material				
47642-33	131	4/2/2015	Roof D	100% NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam				
Sample analyzed as individual layers.						

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47642-33	131	4/2/2015	Roof D	1% WOLLASTONITE	20% FIBROUS GLASS	None Detected
3	Yes	Black Fibrous/Adhesive Tar & Jacket		79% NON FIBROUS MATERIAL		
Sample analyzed as individual layers.						
47642-34	132	4/2/2015	Cafeteria Roof Area	95% NON FIBROUS MATERIAL	5% FIBROUS GLASS	None Detected
1	Yes	White Fibrous/Cementitious Stucco Material				
47642-35	133	4/2/2015	Cafeteria Roof Area	98% NON FIBROUS MATERIAL	2% FIBROUS GLASS	None Detected
1	No	Beige & White Fibrous/Cementitious Stucco Material				
47642-36	134	4/2/2015	Roof E	100% NON FIBROUS MATERIAL		None Detected
1	No	White & Grey Granular/Pliable Rubbery Material				
47642-36	134	4/2/2015	Roof E	100% NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam				
Sample analyzed as individual layers.						
47642-37	135	4/2/2015	Roof E	80% NON FIBROUS MATERIAL	20% CELLULOSE FIBER	None Detected
1	Yes	Black Fibrous/Adhesive Tar				
47642-38	136	4/2/2015	Roof E	100% NON FIBROUS MATERIAL		None Detected
1	No	White & Grey Granular/Pliable Rubbery Material				
47642-38	136	4/2/2015	Roof E	100% NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam				
Sample analyzed as individual layers.						
47642-39	137	4/2/2015	Roof E	80% NON FIBROUS MATERIAL	20% CELLULOSE FIBER	None Detected
1	Yes	Black Fibrous/Adhesive Tar				
47642-40	138	4/2/2015	Roof E	100% NON FIBROUS MATERIAL		None Detected
1	No	White & Grey Granular/Pliable Rubbery Material				
47642-40	138	4/2/2015	Roof E	100% NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam				
Sample analyzed as individual layers.						
47642-41	139	4/2/2015	Roof E	90% NON FIBROUS MATERIAL	5% FIBROUS GLASS 5% CELLULOSE FIBER	None Detected
1	Yes	Black Adhesive Tar				
47642-42	140	4/2/2015	Roof E	100% NON FIBROUS MATERIAL		None Detected
1	No	Grey Granular/Pliable Rubbery Material				

Lab ID	Cust. ID	Sample Date	Sample Location		Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47642-42	140	4/2/2015	Roof E		100% NON FIBROUS MATERIAL		None Detected
2	Yes	Yellow Foam					
Sample analyzed as individual layers.							
47642-42	140	4/2/2015	Roof E		1% WOLLASTONITE 98% NON FIBROUS MATERIAL	1% CELLULOSE FIBER	None Detected
3	Yes	Grey Granular Silver Coat					
Sample analyzed as individual layers.							
47642-43	141	4/2/2015	Roof E		1% WOLLASTONITE 98% NON FIBROUS MATERIAL	1% CELLULOSE FIBER	None Detected
1	Yes	Grey Granular Silver Coat					
47642-43	141	4/2/2015	Roof E		80% NON FIBROUS MATERIAL	10% FIBROUS GLASS 10% CELLULOSE FIBER	None Detected
2	Yes	Black Adhesive Tar					
Sample analyzed as individual layers.							
47642-43	141	4/2/2015	Roof E		100% NON FIBROUS MATERIAL		None Detected
3	Yes	Yellow Foam					
Sample analyzed as individual layers.							
47642-44	142	4/2/2015	Custodial Office		10% METAL FOIL 35% NON FIBROUS MATERIAL	45% FIBROUS GLASS 10% CELLULOSE FIBER	None Detected
1	No	Grey & Red Fibrous/Granular Jacket					
47642-44	142	4/2/2015	Custodial Office		2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation					
Sample analyzed as individual layers.							
47642-45	143	4/2/2015	Custodial Office		79% NON FIBROUS MATERIAL	1% FIBROUS GLASS 10% SYNTHETIC FIBER 10% CELLULOSE FIBER	None Detected
1	Yes	White Fibrous Insulation					
47642-46	144	4/2/2015	Custodial Office		80% NON FIBROUS MATERIAL	10% SYNTHETIC FIBER 10% CELLULOSE FIBER	None Detected
1	Yes	White Fibrous Insulation					
47642-47	145	4/2/2015	Boiler Room		40% METAL FOIL 10% NON FIBROUS MATERIAL	10% FIBROUS GLASS 40% CELLULOSE FIBER	None Detected
1	No	Grey & White Fibrous/Granular Jacket					
47642-48	146	4/2/2015	Boiler Room		30% NON FIBROUS MATERIAL	70% FIBROUS GLASS	None Detected
1	No	Beige & Red Fibrous/Granular Jacket					
47642-48	146	4/2/2015	Boiler Room		70% NON FIBROUS MATERIAL	30% CELLULOSE FIBER	None Detected
2	Yes	White Fibrous Insulation					
Sample analyzed as individual layers.							
47642-49	147	4/2/2015	Boiler Room		30% NON FIBROUS MATERIAL	70% FIBROUS GLASS	None Detected
1	No	Beige & Red Fibrous/Granular Jacket					
47642-49	147	4/2/2015	Boiler Room		70% NON FIBROUS MATERIAL	30% CELLULOSE FIBER	None Detected
2	Yes	Red Fibrous Insulation					
Sample analyzed as individual layers.							

Lab ID	Cust. ID	Sample Date	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description				
47642-50	148	4/2/2015	Boiler Room	40% METAL FOIL	10% FIBROUS GLASS	None Detected
1	No	Grey & White Fibrous/Granular Jacket		10% NON FIBROUS MATERIAL	40% CELLULOSE FIBER	

47642-50	148	4/2/2015	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				

Sample analyzed as individual layers.

Analyst: Kim Mantey

NIST Signatory: K. Mantey, Senior Microscopist

Date Released: 4/21/2015

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APPLIED LABORATORY SERVICES

Commonwealth of Virginia Asbestos
Analytical Laboratory # 3333000153
NVLAP Lab # 200515-0

Certificate of Analysis

Analysis of Bulk Building Materials by Polarized Light Microscopy Techniques
EPA Test Method (EPA/600/R-93/116)

ALS Account: 01-163
Customer: ALS Consulting
4101 Granby Street
Norfolk, VA 23504

P O:
TAT: ALS Standard

LIMS ID: ALS-2015-47641
Project Name: "Former" Meadowbrooke
ProjectNo: 10808
Location: 7620 Shirland Ave. Norfolk
Samples Received: 4/3/2015
Date Analyzed: 4/9/2015

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47641-1	149	4/2/2015	Boiler Room	30% METAL FOIL	10% FIBROUS GLASS	None Detected
1	No	Grey & White Fibrous/Granular Jacket		15% NON FIBROUS MATERIAL	45% CELLULOSE FIBER	
47641-1	149	4/2/2015	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				
Sample analyzed as individual layers.						
47641-2	150	4/2/2015	Boiler Room	30% METAL FOIL	10% FIBROUS GLASS	None Detected
1	No	Grey & White Fibrous/Granular Jacket		15% NON FIBROUS MATERIAL	45% CELLULOSE FIBER	
47641-2	150	4/2/2015	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				
Sample analyzed as individual layers.						
47641-3	151	4/2/2015	Boiler Room	25% METAL FOIL	45% FIBROUS GLASS	None Detected
1	No	Red & White Fibrous/Granular Jacket		10% NON FIBROUS MATERIAL	20% CELLULOSE FIBER	
47641-3	151	4/2/2015	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				
Sample analyzed as individual layers.						
47641-4	152	4/2/2015	Boiler Room	30% METAL FOIL	10% FIBROUS GLASS	None Detected
2	No	White & Grey Fibrous/Granular Jacket		15% NON FIBROUS MATERIAL	45% CELLULOSE FIBER	
47641-4	152	4/2/2015	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				
Sample analyzed as individual layers.						
47641-5	153	4/2/2015	Boiler Room	30% METAL FOIL	10% FIBROUS GLASS	None Detected
1	No	Grey & White Fibrous/Granular Jacket		15% NON FIBROUS MATERIAL	45% CELLULOSE FIBER	

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47641-5 2	153 Yes	4/2/2015 Yellow Fibrous Insulation	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
Sample analyzed as individual layers.						
47641-6 1	154 No	4/2/2015 Red & Beige Fibrous/Granular Jacket	Boiler Room	25% NON FIBROUS MATERIAL	75% FIBROUS GLASS	None Detected
47641-6 2	154 Yes	4/2/2015 Red Fibrous Insulation	Boiler Room	70% NON FIBROUS MATERIAL	30% CELLULOSE FIBER	None Detected
Sample analyzed as individual layers.						
47641-7 1	155 No	4/2/2015 Grey & White Fibrous/Granular Jacket	Boiler Room	25% METAL FOIL 15% NON FIBROUS MATERIAL	10% FIBROUS GLASS 50% CELLULOSE FIBER	None Detected
47641-7 2	155 Yes	4/2/2015 Yellow Fibrous Insulation	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
Sample analyzed as individual layers.						
47641-8 1	156 No	4/2/2015 Grey & White Fibrous/Granular Jacket	Boiler Room	30% METAL FOIL 15% NON FIBROUS MATERIAL	10% FIBROUS GLASS 45% CELLULOSE FIBER	None Detected
47641-8 2	156 Yes	4/2/2015 Yellow Fibrous Insulation	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
Sample analyzed as individual layers.						
47641-9 1	157 No	4/2/2015 Red & Grey Fibrous/Granular Jacket	Boiler Room	20% METAL FOIL 15% NON FIBROUS MATERIAL	45% FIBROUS GLASS 20% CELLULOSE FIBER	None Detected
47641-9 2	157 Yes	4/2/2015 Yellow Fibrous Insulation	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
Sample analyzed as individual layers.						
47641-10 1	158 No	4/2/2015 Grey & White Fibrous/Granular Jacket	Boiler Room	25% METAL FOIL 10% NON FIBROUS MATERIAL	45% FIBROUS GLASS 20% CELLULOSE FIBER	None Detected
47641-10 2	158 Yes	4/2/2015 Yellow Fibrous Insulation	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
Sample analyzed as individual layers.						
47641-11 1	159 No	4/2/2015 Red & Grey Fibrous/Granular Jacket	Boiler Room	20% METAL FOIL 15% NON FIBROUS MATERIAL	45% FIBROUS GLASS 20% CELLULOSE FIBER	None Detected
47641-11 2	159 Yes	4/2/2015 Yellow Fibrous Insulation	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
Sample analyzed as individual layers.						
47641-12 1	160 No	4/2/2015 Red & Grey Fibrous/Granular Jacket	Boiler Room	20% METAL FOIL 15% NON FIBROUS MATERIAL	45% FIBROUS GLASS 20% CELLULOSE FIBER	None Detected

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47641-12	160	4/2/2015	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
2	Yes	Yellow Fibrous Insulation				
Sample analyzed as individual layers.						
47641-13	161	4/2/2015	Boiler Room	2% NON FIBROUS MATERIAL	98% FIBROUS GLASS	None Detected
1	Yes	Yellow Fibrous Insulation				
47641-14	162	4/2/2015	2nd Floor East Stairwell	100% NON FIBROUS MATERIAL		None Detected
1	Yes	White 12X12 Floor Tile				
47641-14	162	4/2/2015	2nd Floor East Stairwell	99% NON FIBROUS MATERIAL	1% CELLULOSE FIBER	None Detected
2	Yes	Grey Granular Flooring Material				
Sample analyzed as individual layers.						
47641-14	162	4/2/2015	2nd Floor East Stairwell	93% NON FIBROUS MATERIAL	2% CELLULOSE FIBER	5% CHRYSOTILE
3	Yes	Black Adhesive Mastic				
Sample analyzed as individual layers.						
47641-15	163	4/2/2015	2nd Floor East Hallway	97% NON FIBROUS MATERIAL		3% CHRYSOTILE
1	Yes	Beige Granular 9X9 Floor Tile				
47641-15	163	4/2/2015	2nd Floor East Hallway	95% NON FIBROUS MATERIAL		5% CHRYSOTILE
2	Yes	Black Adhesive Mastic				
Sample analyzed as individual layers.						
47641-16	164	4/2/2015	Classroom 21	100% NON FIBROUS MATERIAL		None Detected
1	Yes	Beige Granular 12X12 Floor Tile				
47641-16	164	4/2/2015	Classroom 21	95% NON FIBROUS MATERIAL	5% CELLULOSE FIBER	None Detected
2	Yes	Yellow Adhesive Mastic				
Sample analyzed as individual layers.						
47641-17	165	4/2/2015	Classroom 19	96% NON FIBROUS MATERIAL		4% CHRYSOTILE
1	Yes	Green Granular 9X9 Floor Tile				
47641-17	165	4/2/2015	Classroom 19	95% NON FIBROUS MATERIAL		5% CHRYSOTILE
2	Yes	Black Adhesive Mastic				
Sample analyzed as individual layers.						
47641-18	166	4/2/2015	Classroom 21	80% NON FIBROUS MATERIAL		20% CHRYSOTILE
1	No	White & Green Fibrous/Cementitious Chalk Board				
47641-19	167	4/2/2015	Classroom 21	2% NON FIBROUS MATERIAL	98% CELLULOSE FIBER	None Detected
1	No	Beige & White Fibrous Fiber Board				

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47641-19 2	167 Yes	4/2/2015 Brown Adhesive Mastic	Classroom 21	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47641-20 1	168 Yes	4/2/2015 White Granular Plaster	Classroom 19	100% NON FIBROUS MATERIAL		None Detected
47641-20 2	168 Yes	4/2/2015 Beige Fibrous/Granular Scratch Coat	Classroom 19	98% NON FIBROUS MATERIAL	1% ANIMAL HAIR 1% SYNTHETIC FIBER	None Detected
Sample analyzed as individual layers.						
47641-21 1	169 Yes	4/2/2015 White Granular Plaster	Classroom 19	100% NON FIBROUS MATERIAL		None Detected
47641-21 2	169 Yes	4/2/2015 Beige Cementitious Scratch Coat	Classroom 19	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47641-22 1	170 Yes	4/2/2015 White Granular Plaster	2nd Floor, East Wing Hall	100% NON FIBROUS MATERIAL		None Detected
47641-22 2	170 Yes	4/2/2015 Beige Fibrous/Granular Scratch Coat	2nd Floor, East Wing Hall	99% NON FIBROUS MATERIAL	1% SYNTHETIC FIBER	None Detected
Sample analyzed as individual layers.						
47641-23 1	171 Yes	4/2/2015 White Granular Plaster	2nd Floor, East Wing Hall	100% NON FIBROUS MATERIAL		None Detected
47641-23 2	171 Yes	4/2/2015 Beige Fibrous/Granular Scratch Coat	2nd Floor, East Wing Hall	98% NON FIBROUS MATERIAL	1% ANIMAL HAIR 1% SYNTHETIC FIBER	None Detected
Sample analyzed as individual layers.						
47641-24 1	172 Yes	4/2/2015 White Granular Plaster	Classroom 24	100% NON FIBROUS MATERIAL		None Detected
47641-24 2	172 Yes	4/2/2015 Beige Fibrous/Granular Scratch Coat	Classroom 24	98% NON FIBROUS MATERIAL	1% ANIMAL HAIR 1% SYNTHETIC FIBER	None Detected
Sample analyzed as individual layers.						
47641-25 1	173 Yes	4/2/2015 Beige Granular 12X12 Floor Tile	Elevator Hallway	100% NON FIBROUS MATERIAL		None Detected
47641-26 1	174 No	4/2/2015 Red & White Fibrous/Granular Jacket	Classroom 19	30% NON FIBROUS MATERIAL	70% FIBROUS GLASS	None Detected

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47641-26 2	174 Yes	4/2/2015 White Fibrous Insulation	Classroom 19	65% NON FIBROUS MATERIAL	10% SYNTHETIC FIBER 25% CELLULOSE FIBER	None Detected
Sample analyzed as individual layers.						
47641-27 1	175 No	4/2/2015 White Fibrous/Granular Jacket	Classroom 22	25% NON FIBROUS MATERIAL	75% FIBROUS GLASS	None Detected
47641-27 2	175 Yes	4/2/2015 White Fibrous Insulation	Classroom 22	75% NON FIBROUS MATERIAL	25% SYNTHETIC FIBER	None Detected
Sample analyzed as individual layers.						
47641-28 1	176 Yes	4/2/2015 Beige Fibrous Cloth	Attic, East Wing	5% NON FIBROUS MATERIAL	95% CELLULOSE FIBER	None Detected
47641-28 2	176 Yes	4/2/2015 White Fibrous Insulation	Attic, East Wing	70% NON FIBROUS MATERIAL	5% CELLULOSE FIBER	25% CHRYSOTILE
Sample analyzed as individual layers.						
47641-29 1	177 Yes	4/2/2015 White Fibrous Insulation	Attic, East Wing	70% NON FIBROUS MATERIAL		30% CHRYSOTILE
47641-30 1	178 Yes	4/2/2015 Beige Fibrous Cloth	Attic, East Wing	2% NON FIBROUS MATERIAL	98% CELLULOSE FIBER	None Detected
47641-30 2	178 Yes	4/2/2015 White Fibrous Insulation	Attic, East Wing	75% NON FIBROUS MATERIAL		25% CHRYSOTILE
Sample analyzed as individual layers.						
47641-31 1	179 Yes	4/2/2015 White Fibrous Insulation	Attic, East Wing	70% NON FIBROUS MATERIAL		30% CHRYSOTILE
47641-32 1	180 Yes	4/2/2015 Beige Fibrous Cloth	Attic, East Wing	2% NON FIBROUS MATERIAL	98% CELLULOSE FIBER	None Detected
47641-32 2	180 Yes	4/2/2015 White Fibrous Insulation	Attic, East Wing	70% NON FIBROUS MATERIAL	5% FIBROUS GLASS	25% CHRYSOTILE
Sample analyzed as individual layers.						
47641-33 1	181 Yes	4/2/2015 White Fibrous Insulation	Attic, East Wing	70% NON FIBROUS MATERIAL		30% CHRYSOTILE
47641-34 1	182 Yes	4/2/2015 Grey Pliable Jacket-Like Material	Exterior Entry Canopy	100% NON FIBROUS MATERIAL		None Detected
47641-34 2	182 Yes	4/2/2015 Yellow Foam	Exterior Entry Canopy	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						

Lab ID	Cust. ID	Sample Date	Sample Location		Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description					
47641-35	183	4/2/2015	Exterior Entry Canopy	70%	NON FIBROUS MATERIAL	30% CELLULOSE FIBER	None Detected
1	Yes	Black Fibrous/Adhesive Tar					
47641-36	184	4/2/2015	Exterior Entry Canopy	70%	NON FIBROUS MATERIAL	30% CELLULOSE FIBER	None Detected
1	Yes	Black Fibrous/Adhesive Tar					
47641-36	184	4/2/2015	Exterior Entry Canopy	85%	NON FIBROUS MATERIAL		15% CHRYSOTILE
2	Yes	Black Fibrous/Adhesive Tar					
Sample analyzed as individual layers.							
47641-37	185	4/2/2015	Exterior Entry Canopy	98%	NON FIBROUS MATERIAL		2% CHRYSOTILE
1	Yes	White Fibrous/Granular Textured Plaster					
47641-38	186	4/2/2015	West Exterior Perimeter Wall	2% 96%	WOLLASTONITE NON FIBROUS MATERIAL		2% CHRYSOTILE
1	No	White Fibrous/Granular Plaster					
47641-39	187	4/2/2015	West Exterior	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	White Granular Glazing					
47641-40	188	4/2/2015	West Exterior	100%	NON FIBROUS MATERIAL		None Detected
1	No	White Granular/Pliable Caulking					
47641-41	189	4/2/2015	Exterior, West	1% 98%	WOLLASTONITE NON FIBROUS MATERIAL	1% CELLULOSE FIBER	None Detected
1	Yes	White Granular Glazing					
47641-42	190	4/2/2015	Exterior, West	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	White Pliable Caulking					
47641-43	191	4/2/2015	North Side, Exterior	95%	NON FIBROUS MATERIAL	5% FIBROUS GLASS	None Detected
1	No	White Fibrous/Granular Plaster					
47641-44	192	4/2/2015	West Wing, South Side, Exterior	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	White Granular Glazing					
47641-45	193	4/2/2015	West Wing, South Side, Exterior	100%	NON FIBROUS MATERIAL		None Detected
1	No	White Pliable Caulking					
47641-46	194	4/2/2015	Exterior Auditorium	100%	NON FIBROUS MATERIAL		None Detected
1	Yes	White Pliable Caulking					

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47641-47 1	195 No	4/2/2015 White Pliable Caulking	East Wing, West Side	100% NON FIBROUS MATERIAL		None Detected
47641-48 1	196 No	4/2/2015 White Pliable Caulking	East Wing, North Side	100% NON FIBROUS MATERIAL		None Detected
47641-49 1	197 No	4/2/2015 White Granular Plaster	East Wing, East Side	100% NON FIBROUS MATERIAL		None Detected
47641-50 1	198 Yes	4/2/2015 Grey Fibrous/Cementitious Transite	East Wing, North Side	10% WOLLASTONITE 88% NON FIBROUS MATERIAL		2% CHRYSOTILE
47641-51 1	199 Yes	4/2/2015 White Fibrous Insulation	North Side, Trench/Crawl	70% NON FIBROUS MATERIAL		30% CHRYSOTILE <1% CROCIDOLITE
47641-52 1	200 No	4/2/2015 White & Orange Fibrous/Cementitious Insulation	North Side, Trench/Crawl	80% NON FIBROUS MATERIAL		20% CHRYSOTILE <1% CROCIDOLITE

Analyst: Kim Mantey

NIST Signatory: K. Mantey, Senior Microscopist

Date Released: 4/10/2015

This Certificate of Analysis presents analytical data covered by this laboratory's accreditation under the National Voluntary Laboratory Accreditation Program (NVLAP). Detection, identification, and quantification of asbestos in certain building materials (e.g., floor tiles, caulk, asphalts, roofing materials) by PLM is difficult due to interfering matrix components. PLM technique has an estimated detection limit of 1% (v:v). Fibers smaller than 0.25 um cannot be detected; hence, correlative techniques should be considered for data verification. Non-detection of asbestos in certain materials should be verified by analytical electron microscopy techniques (refer to AHERA criteria). Quantifications are estimated by calibrated visual estimate, unless otherwise noted. The estimated measurement of uncertainty in PLM analysis is available upon request. The data reported herein relates only to those samples analyzed. This report shall not be reproduced, except in full, without the written permission of senior managers of this laboratory. This report shall not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

APPLIED LABORATORY SERVICES

Commonwealth of Virginia Asbestos
Analytical Laboratory # 3333000153
NVLAP Lab # 200515-0

Certificate of Analysis

Analysis of Bulk Building Materials by Polarized Light Microscopy Techniques
EPA Test Method (EPA/600/R-93/116)

ALS Account: 01-163
Customer: ALS Consulting
4101 Granby Street
Norfolk, VA 23504

LIMS ID: ALS-2015-47791
Project Name: "Former" Meadowbrooke
ProjectNo: 10808
Location: 7620 Shirland Ave
Samples Received: 4/22/2015
Date Analyzed: 4/23/2015

P/O:
TAT: ALS 24 Hour

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47791-1	R1	4/22/2015	Ext. West Side, West Wing	100% NON FIBROUS MATERIAL		None Detected
1	No	White Granular Plaster				
47791-2	R2	4/22/2015	Ext. West Side, West Wing	100% NON FIBROUS MATERIAL		None Detected
1	No	White Granular Plaster				
47791-3	R3	4/22/2015	Ext. West Side, West Wing	98% NON FIBROUS MATERIAL		2% CHRYSOTILE
1	No	White Granular Plaster				
47791-4	R4	4/22/2015	West Wing Ext. Northwest Corner	100% NON FIBROUS MATERIAL		None Detected
1	No	White Granular Plaster				
47791-5	R5	4/22/2015	West Wing Ext. Northside	98% NON FIBROUS MATERIAL		2% CHRYSOTILE
1	No	White Granular Plaster				
47791-6	R6	4/22/2015	West Wing Ext. Northside	98% NON FIBROUS MATERIAL		2% CHRYSOTILE
1	No	White Granular Plaster				
47791-7	R7	4/22/2015	West Wing Ext. Northeast Area	98% NON FIBROUS MATERIAL		2% CHRYSOTILE
1	No	White Granular Plaster				
47791-8	R8	4/22/2015	Ext. Northside	100% NON FIBROUS MATERIAL		None Detected
1	Yes	Beige Cementitious Stucco				

Lab ID	Cust. ID	Sample Date	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
Layer	Homogenous	Description				
47791-9	R9	4/22/2015	Ext. Northside	100% NON FIBROUS MATERIAL		None Detected
1	Yes	Beige Cementitious Stucco				
47791-10	R10	4/22/2015	Ext. West Wing, Westside	100% NON FIBROUS MATERIAL		None Detected
1	No	White Granular Plaster				
47791-11	R11	4/22/2015	Ext. West Wing, Westside	100% NON FIBROUS MATERIAL		None Detected
1	No	White Granular Plaster				
47791-12	R12	4/22/2015	Ext. West Wing, Southside	98% NON FIBROUS MATERIAL		2% CHRYSOTILE
1	No	White Granular Plaster				
47791-13	R13	4/22/2015	Ext. West Wing, Eastside	98% NON FIBROUS MATERIAL		2% CHRYSOTILE
1	No	White Granular Plaster				
47791-14	R14	4/22/2015	Ext. West Wing, Eastside	100% NON FIBROUS MATERIAL		<1% CHRYSOTILE
1	No	White Granular Plaster				
< 1% = trace.						
47791-15	R15	4/22/2015	Ext. Southside	100% NON FIBROUS MATERIAL		None Detected
1	No	White Cementitious Stucco				
47791-16	R16	4/22/2015	Ext. Southside	100% NON FIBROUS MATERIAL		None Detected
1	No	White Cementitious Stucco				
47791-17	R17	4/22/2015	2nd Fl West Wing Behind Ceramic Tile	100% NON FIBROUS MATERIAL		None Detected
1	Yes	Yellow Adhesive Mastic				
47791-18	R18	4/22/2015	Main Corridor Behind Ceramic Tile	96% NON FIBROUS MATERIAL	2% CELLULOSE FIBER	2% CHRYSOTILE
1	Yes	Yellow Adhesive Mastic				
47791-19	R19	4/22/2015	Main Corridor Behind Ceramic Tile	96% NON FIBROUS MATERIAL	2% CELLULOSE FIBER	2% CHRYSOTILE
1	Yes	Yellow Adhesive Mastic				
47791-20	R20	4/22/2015	2nd Fl East Wing Behind Ceramic Tile	96% NON FIBROUS MATERIAL	2% CELLULOSE FIBER	2% CHRYSOTILE
1	Yes	Yellow Adhesive Mastic				

Lab ID Layer	Cust. ID Homogenous	Sample Date Description	Sample Location	Non Fibrous	Non Asbestos Fibers	Asbestos Fibers
47791-21 1	R21 No	4/22/2015 Yellow & Green Granular Surfacing Material	Corridor #4	98% NON FIBROUS MATERIAL		2% CHRYSOTILE
47791-21 2	R21 Yes	4/22/2015 Grey Cementitious Concrete	Corridor #4	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47791-22 1	R22 No	4/22/2015 Yellow & Green Granular Surfacing Material	Corridor #4	98% NON FIBROUS MATERIAL		2% CHRYSOTILE
47791-22 2	R22 Yes	4/22/2015 Grey Cementitious Concrete	Corridor #4	100% NON FIBROUS MATERIAL		None Detected
Sample analyzed as individual layers.						
47791-23 1	R23 No	4/22/2015 Green & Yellow Granular Surfacing Material	Classroom #12	98% NON FIBROUS MATERIAL		2% CHRYSOTILE
47791-24 1	R24 No	4/22/2015 Green Granular Surfacing Material	Classroom #26, 2nd Fl	98% NON FIBROUS MATERIAL		2% CHRYSOTILE
47791-25 1	R25 No	4/22/2015 Yellow & Green Granular Surfacing Material	West Wing Stairwell	98% NON FIBROUS MATERIAL		2% CHRYSOTILE
47791-26 1	R26 No	4/22/2015 Yellow & Green Granular Surfacing Material	Cafeteria	100% NON FIBROUS MATERIAL		<1% CHRYSOTILE
< 1% = trace.						
47791-27 1	R27 No	4/22/2015 Yellow & Green Granular Surfacing Material	Cafeteria	100% NON FIBROUS MATERIAL		<1% CHRYSOTILE
< 1% = trace.						
47791-28 1	R28 No	4/22/2015 Yellow & Green Granular Surfacing Material	Foyer	100% NON FIBROUS MATERIAL		<1% CHRYSOTILE
< 1% = trace.						
47791-29 1	R29 No	4/22/2015 Grey & Blue Granular Surfacing Material	Library Entrance	98% NON FIBROUS MATERIAL		2% CHRYSOTILE
47791-30 1	R30 No	4/22/2015 Black Fibrous/Adhesive Tar Paper	East Wing, 2nd Fl, Under 12 X12 Ft A Wood, CR #21	20% NON FIBROUS MATERIAL	5% SYNTHETIC FIBER 75% CELLULOSE FIBER	None Detected

Lab ID Cust. ID Sample Date Sample Location
Layer Homogenous Description

Non Fibrous

Non-Asbestos Fibers

Asbestos Fibers

Analyst: Kim Mantey

NIST Signatory: K. Mantey, Senior Microscopist

Date Released: 4/23/2015

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ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "former" Meadowsbrook School / Project Location: 7620 Skirland Ave, Norfolk

Date Sampled: 3/31/15 Results Due: std.

Inspector(s): P. Thomas

ALS Lims #: 47592

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
1	Text. ceiling Plaster	Cafeteria, top coat	2,890sf	G	N
2	ceiling Plaster	Cafeteria, base coat	2,890sf		Y
3	12"x12" FT, white	Cafeteria	2,890sf		N
4	Terrazzo Flooring	Kitchen	1,984sf		N
5	2"-4" O.D. Pipe Ins.	Radiator, cafeteria	90Lb		Y
6	" "	" "	RS		Y
7	12"x12" FT/m, top layer	Kitchen, dry storage	144sf		N
8	FT/m, bottom layer	" "	144sf		N
9	Smooth plaster ceiling	Kitchen	1,984sf		Y
10	" "	" "	R10	↓	Y

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: PZ	Company: ALS	Date/Time: 3/31/15	Received By: Sanford ALS	Company: ALS	Date/Time: 3/31/15
Released By:	Company:	Date/Time:	Received By:	Company:	Date/Time:

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "former" Meadowbrook School Project Location: 7620 Shickland Ave, Norfolk

Date Sampled: 3/31/15 Results Due: Std.

Inspector(s): P. Thomas

ALS Lims #: 47592

Sample #	Sample Description	Sample Location	Quantity	#Condition G/D/SD	Friable Y/N
11	2"-4" O.D. Pipe Ins.	overhd, kitchen	420LF	G	Y
12	2"-4" mudded elbow	" "	R11		Y
13	4"-6" O.D. Pipe Ins.	" "	690LF		Y
14	cementitious Pipe	water heater vent, kitchen	6LF		N
15	HVAC duct, int. ins.	overhd, cafeteria	2,275sf		Y
16	" "	" "	R15		Y
17	Int. window glaze	Decorative windows, kitchen	180LF (4 windows)		N
18	CMU block Filler	cafeteria	NG		N
19	sink mastic, white	classroom #10	16sf		N
20	Int. window caulk:ng	" "	64LF		N

*Condition - (G) Good

(D) Damaged

(SD) Significantly Damaged

Special Instructions:

Released By: PH	Company: ALS	Date/Time: 3/31/15	Received By: [Signature]	Company: ALS	Date/Time: 4/1/15
Released By:	Company:	Date/Time:	Received By:	Company:	Date/Time:

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "former" Mendenbake School Project Location: 7620 Shirland Ave, Norfolk

Date Sampled: 3/31/15

Results Due: Std.

Inspector(s): P. Thomas

ALS Lims #: 47592

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
21	Int. window caulking	Classroom #13	64 LF	G	N
22	2'x4' ct.	Corridor #4	7,500 SF		Y
23	Text. ceiling plaster	above drop ct., corridor #4	7,425 SF		Y
24	" "	classroom #9	R23		Y
25	2'x4' ct.	clinic	R22		Y
26	HVAC duct JWS.	overhd, clinic	NA		Y
27	9"49" FT/m, brown	corridor #4	1,330 SF		N
28	Decorative FT/m, dark brown	" "	1,600 SF		N
29	Corkboard and mastic	" "	400 SF		Y/N
30	Wall Plaster, gray	behind corkboard, corridor #4	400 SF	↓	Y

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: <u>PZ</u>	Company: <u>ACS</u>	Date/Time: <u>3/31/15</u>	Received By: <u>Paul J. P.</u>	Company: <u>ALS</u>	Date/Time: <u>4/1/15</u>
Released By: _____	Company: _____	Date/Time: _____	Received By: _____	Company: _____	Date/Time: _____

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "former" Meadowbrook School Project Location: 7620 Shickland Ave, 1201-601K

Date Sampled: 3/31/15 Results Due: Std.

Inspector(s): P. Thomas

ALS Lims #: 47592

Sample #	Sample Description	Sample Location	Quantity	#Condition G/D/SD	Friable Y/N
31	rockboard & mastic	Classroom #10	R29	G	Y/N
32	wall plaster, gray	behind corkboard, classroom #10	R30		Y
33	FT/m, red	custodial closet	155sf		N
34	black mastic	under carpet, classroom #8	660sf		N
35	Decorative FT/m dark brown	classroom #12	1,525sf		N
36	wallboard	Principal office	NQ		Y
37	" "	" "	NQ		Y
38	ovind concrete vapor barrier	closet/ovind, classroom #9	NQ		N
39	covebase & adhesive	classroom #9	680cf		N
40	12" x 12" FT/m, white	clinic	2,355sf	↓	N

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: PL	Company: ALS	Date/Time: 3/31/15	Received By: [Signature]	Company: ALS	Date/Time: 4/11/15
Released By:	Company:	Date/Time:	Received By:	Company:	Date/Time:

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "former" Meadowbrook Project Location: 7620 Skisland Ave, Norfolk

Date Sampled: 3/31/15

Results Due: Std

Inspector(s): P. Thomas

ALS Lims #: 475912

Sample #	Sample Description	Sample Location	Quantity	#Condition G/D/SD	Friable Y/N
41	12" x 12" FT/m, beige	Teachers Lounge	500sf	G	N
42	cockboard & mastic	corridor #3	480sf		Y/N
43	wall plaster, gray	under cockboard, corridor #3	480sf		Y
44	1' x 1' ct & adhesive puck	classroom #29	1,110sf		Y/N
45	" "	" "	R45		Y/N
46	2" O.D. Pipe Ins.	classroom #28 & radiators	156f		Y
47	" "	" "	R46		Y
48	1/2" O.D. Pipe Ins & mastic	classroom #28, closet	326f		Y/N
49	9" x 9" FT/m, tan	corridor #3	6,087sf		N
50	12" x 12" FT	" "	130sf		N

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: <u>PK</u>	Company: <u>ALS</u>	Date/Time: <u>3/31/15</u>	Received By: <u>Sanjiv AS</u>	Company: <u>ALS</u>	Date/Time: <u>4/11/15</u>
Released By: _____	Company: _____	Date/Time: _____	Received By: _____	Company: _____	Date/Time: _____

ALS Project #: 10808

Project Name: "former" middle school!

Project Location: 7620 Shirland Ave, Norfolk

Date Sampled: 3/31/15 Results Due: Std

Results Due: Std

Inspector(s): P. Thomas

ALS Lims #:

47592

[illegible]

*Condition - (G) Good	(D) Damaged	(SD) Significantly Damaged
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Special Instructions:

Released By:

Company

Date/Time

Received By

Company

Date/Time

Released By:

Company

Date/Time

Received By:

Company

Date/Time

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "Former Meadowsbrook School"

Project Location: 7620 Skisland Ave, Norfolk

Date Sampled: 4/1/15

Results Due: STD

Inspector(s): P. Thomas

ALS Lims #: 47617

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
52	12" x 12" FT/m, beige	auditorium stage	830 SF	G	N
53	12" x 12" FT/m, white	auditorium seating area	2655 SF	G	N
54	2" OR TSI	auditorium stage	22 LF	G	Y
55	wall plaster	auditorium stage	2000 SF	G	Y
56	tectum board	auditorium seating area	8300 SF 8280 SF	G	Y
57	tectum board	auditorium seating area	R56 7980 SF	G	Y
58	tectum board	auditorium seating area	R56 7980 SF	G	Y
59	stair tread & adhesive	stage	48 SF	G	N
60	cove base, black w/adhesive	auditorium seating + hallways	265 LF	G	N
61	Ramp tread & adhesive	auditorium side entrances	560 SF	G	N

*Condition - (G) Good

(D) Damaged

(SD) Significantly Damaged

Special Instructions:

Released By: <u>PK</u>	Company: <u>ALS</u>	Date/Time: <u>4/1/15</u>	Received By: <u>Paul Ford</u>	Company: <u>ALS</u>	Date/Time: <u>4/1/15</u>
Released By: _____	Company: _____	Date/Time: _____	Received By: _____	Company: _____	Date/Time: _____

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "former" Meadowbrook School Project Location: 7620 Shirkland Ave, Norfolk

Date Sampled: 4/1/15

Results Due: STD

Inspector(s): P. Thomas

ALS Lims #: 49617

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
62	Cementitious Baseboard	Auditorium Foyer	30LF	G	N
63	stage curtain, red	A stage area	300SF	G	Y
64	stage curtain, beige	"	340SF	G	Y
65	wallboard	staircase to projection	240SF	G	Y
66	vapor Barrier	Ext wall / Auditorium Foyer	NG	G	N
67	corkboard, gray	CR #6	32SF	G	Y
68	12"x12" FT/M, white	CR #6	792SF	G	N
69	corkboard w/ cloth	CR #6	66SF	G	Y
70	wall plaster	CR #6	520SF	G	Y
71	6"-8" O.D. Pipe INS.	main Hall, lower sec. Pipe	35LF	G	Y

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: <i>Ph</i>	Company: ALS	Date/Time: 4/1/15	Received By: <i>Samuel</i>	Company: ALS	Date/Time: 4/1/15
Released By:	Company:	Date/Time:	Received By:	Company:	Date/Time:

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "Former" Meadow Brook

Project Location: 7620 Shirland Ave Norfolk

Date Sampled: 4/1/15

Results Due: std

Inspector(s): P. Thomas

ALS Lims #: 47617

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
72	6"-8" O.D. Pipe Ins.	Main Hall, lower pipe sec.	R-71	G	Y
73	6"-8" O.D. Pipe Ins.	Main Hall, upper pipe sec.	75 LF	G	Y
74	"	"	R-73	G	Y
75	9"x9" FT/m, tan	Main hall	1700 SF	G	N
76	wall plaster	Main hall outside rm 7	15,208 SF	G	Y
77	wall plaster	Main hall outside girls locker	R76	G	Y
78	ceментitious baseboard	Main hall	365 LF	G	N
79	6"-8 O.D. Pipe Ins.	Crawlspace under main corridor	1,560 LF	SD	Y
80	"	"	R79	SD	Y
81	"	"	R79	SD	Y

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: <u>PA</u>	Company: <u>ALS</u>	Date/Time: <u>4/1/15</u>	Received By: <u>[Signature]</u>	Company: <u>ALS</u>	Date/Time: <u>4/1/15</u>
Released By: _____	Company: _____	Date/Time: _____	Received By: _____	Company: _____	Date/Time: _____

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808 Project Name: "former" Meadow Brook Project Location: 7620 Skirland Ave, Norfolk

Date Sampled: 4/1/15 Results Due: 5/1/15 Inspector(s): P. Thomas ALS Lims #: 47617

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
3182	6"-8" O.D. Pipe Ins.	Crawlspace under main corridor	R79	SD	Y
3283	"	"	R79	SD	Y
3384	mastic adhesive	associated w/ ceramic tile main corridor	1,520SF	G	N
3485	mastic adhesive	media center	2030SF	G	N
3586	textured ceiling plaster	media center	2030SF	G	Y
3687	cove base and adhesive	media center	204LF	G	N
3788	drywall	girls locker room	2,880SF	G	Y
3889	2'x4 CT	Boys restroom	260SF	D	Y
3990	2"-4" O.D. Pipe Ins.	"	15LF	G	Y
4091	"	main corridor	45LF	G	Y

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: <u>PR</u>	Company: <u>ALS</u>	Date/Time: <u>4/1/15</u>	Received By: <u>[Signature]</u>	Company: <u>ALS</u>	Date/Time: <u>4/1/15</u>
Released By: _____	Company: _____	Date/Time: _____	Received By: _____	Company: _____	Date/Time: _____

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "former" Meadow Brook Project Location: 7620 Shirland Ave Norfolk

Date Sampled: 4/1/15

Results Due: 5/1/15

Inspector(s): P. Thomas

ALS Lims #: 47617

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
92	12" x 12" FT, tan w/marble	East end office, under eucaly	416 sf	G	N
93	Chalkboard Panel	classroom 2, behind corkboard	320 sf	G	N
94	Transite chalkboard	classroom 4	605 sf	G	N
95	2' x 4' ct	classroom 3	1,880 sf	G	Y
96	" "	classroom 2	630 sf	G	Y
97	2' x 2' ct	Elev. Foyer, East end	312 sf	G	Y
98	smooth ceiling Plaster	Girls Restroom	264 sf	G	Y

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: <i>PZ</i>	Company: ALS	Date/Time: 4/1/15	Received By: <i>[Signature]</i>	Company: ALS	Date/Time: 4/1/15
Released By:	Company:	Date/Time:	Received By:	Company:	Date/Time:

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "Former" Meadow Brook Project Location: 7620 Shickland Ave Norfolk

Date Sampled: 4/2/15

Results Due: Std.

Inspector(s): P. Thomas

ALS Lims #: 49642

Sample #	Sample Description	Sample Location	Quantity	#Condition G/D/SD	Friable Y/N
99	BUR, Top layer	Roof A	6,144 SF	G	N
100	BUR, Bottom Layer	Roof A	6,144 SF		
101	Perimeter Flashing, Top Layer	Roof A	328 LF		
102	Perimeter Flashing, Bottom Layer	Roof A	328 LF		
103	Window Glazing, Exterior	Roof A, second floor			
104	BUR, Top Layer	Roof A	R99		
105	BUR, Bottom Layer	Roof A	R100		
106	Parapet Flashing Top layer	Roof A	365 SF		
107	Parapet Flashing Bottom Layer	Roof A	365 SF		
108	Perimeter Flashing Top Layer	Roof A	R101		

(SD) Significantly Damaged

#Condition - (G) Good

(D) Damaged

Special Instructions:

Released By: PK	Company: ACS	Date/Time: 4/3/15	Received By: [Signature]	Company: ALS	Date/Time: 4/3/15
Released By:	Company:	Date/Time:	Received By:	Company:	Date/Time:

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "Former" Meadowbrook Project Location: 7620 Shirdan Ave, North

Date Sampled: 4/12/15 Results Due: 5/1/15

Inspector(s): P. Thomas

ALS Lims #: 47642

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Triable Y/N
109	Perimeter Flashing Bottom Layer	Roof A	R102	G	N
110	Top Layer Mechanical Flashing	Roof A	74LF		
111	Hatch Flashing, Top Layer	Roof A	R110		
112	Hatch Flashing, Bottom Layer	Roof A	R110		
113	BUR, Top Layer	Roof B	5,022SF		
114	BUR, Bottom Layer	Roof B	5,022SF		
115	Vent Flashing, Top Layer	Roof B	95LF		
116	Vent Flashing, Bottom Layer	Roof B	95LF		
117	Perimeter, Transition, Flashing Top Layer	Roof B	206LF		
118	Transition Perimeter Flashing Bottom Layer	Roof B	206LF		

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: <u>PZ</u>	Company: <u>ALS</u>	Date/Time: <u>4/13/15</u>	Received By: <u>[Signature]</u>	Company: <u>ALS</u>	Date/Time: <u>4/13/15</u>
Released By: _____	Company: _____	Date/Time: _____	Received By: _____	Company: _____	Date/Time: _____

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808 Project Name: "Gomer" MeadowBrooke Project Location: 7620 Shilland Ave, Norfolk

ALS Lims #: 47642

Date Sampled: 4/2/15 Results Due: 5th Inspector(s): P. Thomas

Sample #	Sample Description	Sample Location	Quantity	#Condition G/D/SD	Friable Y/N
119	BUR, Top Layer	Roof B	R113	G	N
120	BUR, Bottom Layer	Roof B	R114		
121	Parapet, Top Layer	Roof B	1,945sf		
122	Parapet Bottom Layer	Roof B	1,945sf		
123	Slate Shingles	Roof C	13,600sf		
124	slate shingles	Roof C	R123		
125	BUR, Top layer	Roof D	4,641sf		
126	BUR, Bottom Layer	Roof D	4,641sf		
127	Parapet Top Layer	Roof D	1,750sf		
128	Parapet, Bottom Layer HVAC Ductwork &	Roof D	1,750sf		

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: <u>PK</u>	Company: <u>ALS</u>	Date/Time: <u>4/3/15</u>	Received By: <u>[Signature]</u>	Company: <u>ALS</u>	Date/Time: <u>4/3/15</u>
Released By: _____	Company: _____	Date/Time: _____	Received By: _____	Company: _____	Date/Time: _____

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "former" Meadowbrook Project Location: 7620 Shickland Ave, Norfolk

Date Sampled: 4/2/15 Results Due: 5/6/15 Inspector(s): P. Thomsen ALS Lims #: 497642

Sample #	Sample Description	Sample Location	Quantity	#Condition G/D/SD	Friable Y/N
129	HVAC Ductwork	Roof D	2615F	G	Y
130	Mechanical Flashing, Top Layer	Roof D	78LF		N
131	Parapet Cap, Top Layer	Roof D	NA		
132	Stucco/Plaster	Cafeteria Roof Area	NA		
133	Stucco/Plaster	Cafeteria Roof Area	NA		
134	BUR, Top Layer	Roof E	7,920SF		
135	BUR Bottom Layer	Roof E	7,920SF		
136	BUR, Top Layer	Roof E	R134		
137	BUR, Bottom Layer	Roof E	R135		
138	Perimeter Flashing, top layer BUR, Top Layer	Roof E	R134/420LF		

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: <u>PA</u>	Company: <u>ALS</u>	Date/Time: <u>4/3/15</u>	Received By: <u>S. J. P.</u>	Company: <u>ALS</u>	Date/Time: <u>4/3/15</u>
Released By: _____	Company: _____	Date/Time: _____	Received By: _____	Company: _____	Date/Time: _____

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "Fama" Meriba Brook Project Location: 7620 Skidland Ave, New York

Date Sampled: 4/2/15 Results Due: STD

Inspector(s): P. Thomas

ALS Lims #: 47642

Sample #	Sample Description	Sample Location	Quantity	#Condition G/D/SD	Friable Y/N
139	Perimeter Flashing, Bottom Layer Deck, Bottom Layer	Roof E	420 LF	G	N
140	Mechanical Flashing Top Layer	Roof E	80 LF		
141	Mech. Flashing Bottom Layer Deck Flashing, Bottom Layer	Roof E Roof E	80 LF		
142	2" to 4" TSI	Custodial Office	105 LF	G	
143	2" to 4" TSI	custodial office	R-142	G	
144	2" to 4" TSI	custodial office	R-142	G	
145	1" OD pipe insulation	Boiler Room	160 LF		
146	6" to 8" OD Lower Area	Boiler Room	405 LF		
147	6" to 8" OD Lower Area	Boiler Room	R146		
148	6" to 8" OD upper area	Boiler Room	R146		

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: PZ	Company: ALS	Date/Time: 4/3/15	Received By: [Signature]	Company: ALS	Date/Time: 4/3/15
Released By:	Company:	Date/Time:	Received By:	Company:	Date/Time:

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808 Project Name: "Former" Meadow Brook Project Location: 7620 Shirland Ave, Norwalk

Date Sampled: 4/2/15 Results Due: 5/1 Inspector(s): P. Thomas ALS Lims #: 47641

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
149	6" to 8" OD upper Area	Boiler Room	R146	G	Y
150	1" to 2" OD overhead	Boiler Room	160LF		
151	3" to 4" OD perimeter wall	Boiler Room	110LF		
152	1" to 2" OD perimeter wall	Boiler Room	R150		
153	2" to 4" OD perimeter wall	Boiler Room	R151		
154	12" OD mudded joint p. wall	Boiler Room	2LF		
155	8" to 12" OD overhead pipe	Boiler Room	62LF		
156	12" to 16" OD overhead pipe	Boiler Room	30LF		
157	Exhaust stack Boiler #1	Boiler Room	30LF		
158	Exhaust stack Boiler #2	Boiler Room	R157		

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: Ph Company: ALS Date/Time: 4/3/15
 Received By: Sanford Company: ALS Date/Time: 4/3/15

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "former" Meadow Brook Project Location: 7620 Shiloh Ave, Norfolk

Date Sampled: 4/12/15 Results Due: 5/15 Inspector(s): P. Thomas ALS Lims #: 47641

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Triable Y/N
159	overhead valve	Boiler Room	10LF	G	Y
160	Boiler #2 overhead header	Boiler Room	10LF	G	Y
161	Boiler #1 under skin insul. 12"x12" FT/m, white	Boiler Room	220SF	G	Y
162	2nd floor East stair	2nd floor East stairwell	144SF	G	N
163	9"x9" FT/m, beige	2nd floor East Hallway	7.056SF 830SF	G	N
164	12"x12" Pattern FT/m	CLASSROOM 21	R163	G	N
165	9"x9" FT/m green	CLASSROOM 19	R163 440SF	G	N
166	Transite chalkboard	CLASSROOM 21	400SF 400SF	G	N
167	corkboard & adhesive	" "	920SF	G	Y/N
168	wall plaster, smooth	CLASSROOM 19	16,080SF	G	Y

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: <i>PA</i>	Company: <i>ALS</i>	Date/Time: <i>4/13/15</i>	Received By: <i>John</i>	Company: <i>ALS</i>	Date/Time: <i>4/13/15</i>
Released By: _____	Company: _____	Date/Time: _____	Received By: _____	Company: _____	Date/Time: _____

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "former" Meadow Brook Project Location: 7620 Shickland Ave Norfolk

Date Sampled: 4/2/15 Results Due: STD

Inspector(s): P. Thomas

ALS Lims #: 47641

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
169	ceiling plaster smooth	classroom 19	7,800 SF	G	N
170	"	2nd fl, East wing Hall	R169	G	Y
171	"	"	R169	G	
172	wall plaster smooth	classroom 24	R168	G	Y
173	12"x12" FT/m stone pattern	Elevator Hallway	280 SF 280 SF	G	N
174	4"-6" pipe insul.	classroom 19	210 LF	G	Y
175	"	classroom 22	R174	G	Y
176	6" to 8" OD pipe insul.	Attic, East wing	380 LF	G	Y
177	mudded elbow 6" to 8" OD	Attic, East wing	R176	G	Y
178	6" to 8" OD pipe insul.	Attic, East wing	R176	G	Y

(SD) Significantly Damaged

Special Instructions:

Released By: <u>PT</u>	Company: <u>ALS</u>	Date/Time: <u>4/3/15</u>	Received By: <u>Jeff</u>	Company: <u>ALS</u>	Date/Time: <u>4/3/15</u>
Released By: _____	Company: _____	Date/Time: _____	Received By: _____	Company: _____	Date/Time: _____

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "former" Medaba Brooke Project Location: 7620 Shisland Ave work

Date Sampled: 4/2/15 Results Due: 5/1/15 Inspector(s): P. Thomas ALS Lims #: 47641

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
179	6" to 8" mudded elbow	Attic, East Wing	R176	G	Y
180	2" to 4" OD pipe insul.	Attic, East Wing	R176	G	Y
181	2" to 4" OD mudded elbow	Attic, East Wing	R176	G	Y
182	BUR, top layer	Exterior Entry Canopy	1,120 SF	G	N
183	BUR, bottom layer	Exterior Entry Canopy	1,120 SF	G	N
184	Perimeter Flashing	Exterior Entry Canopy	R183	G	N
185	Textured Ceiling Plaster	Exterior Entry Canopy	1,120 SF	G	Y
186	Exterior Stucco/Plaster	West Exterior Perimeter Wall	7,225 SF	G	N
187	Exterior Window Glaze	West Exterior	6,550 LF	G	N
188	Exterior Window Caulking	West Exterior	R187	G	N

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: <u>PL</u>	Company: <u>ALS</u>	Date/Time: <u>4/3/15</u>	Received By: <u>J. J. F.</u>	Company: <u>ALS</u>	Date/Time: <u>4/3/15</u>
Released By: _____	Company: _____	Date/Time: _____	Received By: _____	Company: _____	Date/Time: _____

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808 Project Name: "former" MeadowBrooke Project Location: 7620 Shiland Ave, Norfolk
 Date Sampled: 4/2/15 Results Due: Std Inspector(s): P. Thomas ALS Lims #: 47641

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
189	Exterior window caulking glaze	Exterior, west	R187	G	N
190	Exterior window frame caulk sealant	Exterior, west	1,296 LF		
191	Exterior Stucco/plaster	North side, Exterior	R186		
192	Exterior window glaze	West wing, south side	R187		
193	Exterior window caulking	West wing, south side, Exterior	R187		
194	Exterior window caulking	Exterior Auditorium	NQ		
195	Exterior window caulking	East wing, west side	NQ		
196	Exterior door caulking	East wing, North side	22 LF		
197	Exterior Stucco/plaster	East Entrance, East side	600 SF		
198	Exterior Lower Roof Roof Skingle Transite	East wing, North side	260 SF		

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: PZ Company: ALS Date/Time: 4/3/15
 Received By: JLF Company: ALS Date/Time: 4/3/15
 Released By: Company: Date/Time: 4/3/15
 Received By: Company: Date/Time: 4/3/15

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name:

Project Name: "former" meadow Brook Project Location: 7620 Skisland Ave. north

Date Sampled:

4/2/15 Results Due:

5th.

Inspector(s):

P. Thoma,

ALS Lims #:

47641

[illegible]

Special Instructions:

Released By:

Company

Date/Time

Received By

Company

Date/Time

Released By:

Company

Date/Time

Received By:

Company

Date/Time

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "Former" Meadowbrook Project Location: 7620 Shirland Ave

Date Sampled: 4/22/15 Results Due: 24hr

Inspector(s): P. Thomas

ALS Lims #: 47791

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
R1	Stucco/Plaster	Ext. west side, westwing	7225sf	G	Y
R2	" "	" "	R/R1		
R3	" "	" "	" "		
R4	" "	westwing	" "		
R5	" "	Ext. Northwest corner	" "		
R6	" "	westwing	" "		
R7	" "	Ext. Northside	" "		
R8	Stucco	" "	" "		
R9	" "	Ext. westwing	NA		N
R10	Stucco/plaster	Ext. Northside	NA		N
		Ext. westwing, west side	R/R1		Y

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: PZ	Company: ALS	Date/Time: 4/22/15	Received By: Jan Fulp	Company: ALS	Date/Time: 4/22/15
Released By:	Company:	Date/Time:	Received By:	Company:	Date/Time:

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808 Project Name: "Former" Meadowsbrook Project Location: 7620 Shickland Ave

Date Sampled: 4/22/15 Results Due: 24hr Inspector(s): P. Thomas ALS Lims #: 47791

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
R11	stucco/plaster	Ext. westwing, west side	R/R1	G	Y
R12	"	Ext. westwing, south side	"		
R13	"	Ext. westwing, east side	"		
R14	"	"	"		
R15	stucco	Ext. south side	NG		N
R16	"	"	NG		N
R17	adhesive / Patch	2nd Fl. westwing behind ceramic tile	NA (<1sf)		N
R18	adhesive	main corridor behind ceramic tile	6,240sf		N
R19	"	"	R/R19		N
R20	"	2nd Fl. Eastwing behind ceramic tile	R/R19		N

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By: <u>PA</u>	Company: <u>ALS</u>	Date/Time: <u>4/22/15</u>	Received By: <u>Jan P. J. J.</u>	Company: <u>ALS</u>	Date/Time: <u>4/22/15</u>
Released By: _____	Company: _____	Date/Time: _____	Received By: _____	Company: _____	Date/Time: _____

ASBESTOS FIELD INSPECTION FORM/CHAIN OF CUSTODY

ALS Project #: 10808

Project Name: "Former" Meadowbrook Project Location: 7620 Skirland Ave

Date Sampled: 4/22/15

Results Due: 2 Yr

Inspector(s): P. Thomas

ALS Lims #: 47791

Sample #	Sample Description	Sample Location	Quantity	*Condition G/D/SD	Friable Y/N
R21	cmu Block Filler	Corridor #4	14,840sf	G	N
R22	"	"	R/R21		
R23	"	Classroom #12	"		
R24	"	Classroom #26, 2nd Fl.	"		
R25	"	West wing Stairwell	"		
R26	"	Cafeteria	~800sf		
R27	"	"	R/R26		
R28	"	Foyer	R/R21		
R29	"	Library entrance	R/R21		
R30	Tar Paper/Vapor Barrier	East wing 2nd Fl. under 12x12 FT wood, CR#21	N/A		

*Condition - (G) Good (D) Damaged (SD) Significantly Damaged

Special Instructions:

Released By:

Company

Date/Time

Received By:

Company

Date/Time

PA

ALS

4/22/15

SPR

ALS

4/22/15

Released By:

Company

Date/Time

Received By:

Company

Date/Time

APPENDIX B - LEAD BASED PAINT DATA/RESULTS

Meadowbrook Elementary School
Representative XRF Lead-Based Paint Inspection

Reading No	Type	Units	Component	Substrate	Side	Condition	Floor	Room	Results	PbC	PbC Error
1	SHUTTER	CAL									
2	PAINT	mg / cm ^2	CAL						Negative	5.33	0
3	PAINT	mg / cm ^2	CAL						Negative	0.7	0.2
4	PAINT	mg / cm ^2	CAL						Positive	3.3	2
5	PAINT	mg / cm ^2	CAL						Positive	1.6	0.4
6	PAINT	mg / cm ^2	WALL	CONCRETE	B	INTACT	FIRST	CAFETERIA	Negative	0.07	0.92
7	PAINT	mg / cm ^2	WALL	CONCRETE	D	INTACT	FIRST	CAFETERIA	Negative	0.02	0.03
8	PAINT	mg / cm ^2	WINDOW	METAL	A	FAIR	FIRST	CAFETERIA	Negative	0.4	0.4
9	PAINT	mg / cm ^2	WINDOW FRAME	METAL	A	FAIR	FIRST	CAFETERIA	Negative	0.23	0.27
10	PAINT	mg / cm ^2	WINDOW	METAL	B	INTACT	FIRST	CAFETERIA	Negative	0.6	0.4
11	PAINT	mg / cm ^2	WINDOW FRAME	METAL	B	FAIR	FIRST	CAFETERIA	Negative	0.4	0.4
12	PAINT	mg / cm ^2	RADIATOR	METAL	B	INTACT	FIRST	CAFETERIA	Negative	0	0.02
13	PAINT	mg / cm ^2	PIPE	METAL	A	INTACT	FIRST	CAFETERIA	Negative	0	0.02
14	PAINT	mg / cm ^2	DOOR	WOOD	C	INTACT	FIRST	CAFETERIA	Negative	0	0.04
15	PAINT	mg / cm ^2	DOOR FRAME	METAL	C	INTACT	FIRST	CAFETERIA	Positive	1.4	0.3
16	PAINT	mg / cm ^2	DOOR JAMB	METAL	C	INTACT	FIRST	CAFETERIA	Negative	0.8	0.2
17	PAINT	mg / cm ^2	DOOR	WOOD	C	INTACT	FIRST	CAFETERIA	Negative	0.02	0.06
18	PAINT	mg / cm ^2	DOOR FRAME	METAL	C	INTACT	FIRST	CAFETERIA	Negative	0.4	0.4
19	PAINT	mg / cm ^2	DOOR JAMB	METAL	C	INTACT	FIRST	CAFETERIA	Negative	0.4	0.5
20	PAINT	mg / cm ^2	WALL	CERAMIC	B	INTACT	FIRST	CAF KITCHEN	Positive	4.9	2.7
21	PAINT	mg / cm ^2	WALL	CERAMIC	D	INTACT	FIRST	CAF KITCHEN	Positive	6.3	5
22	PAINT	mg / cm ^2	DOOR	WOOD	B	INTACT	FIRST	CAF KITCHEN	Negative	0.05	0.22
23	PAINT	mg / cm ^2	DOOR FRAME	METAL	B	INTACT	FIRST	CAF KITCHEN	Negative	0.8	0.2
24	PAINT	mg / cm ^2	DOOR JAMB	METAL	B	INTACT	FIRST	CAF KITCHEN	Negative	0.4	0.5
25	PAINT	mg / cm ^2	WINDOW	METAL	A	INTACT	FIRST	CAF KITCHEN	Negative	0.19	0.35
26	PAINT	mg / cm ^2	WINDOW FRAME	METAL	A	INTACT	FIRST	CAF KITCHEN	Negative	0.19	0.35
27	PAINT	mg / cm ^2	PIPE	METAL	B	INTACT	FIRST	CAF KITCHEN	Negative	0.01	0.03
28	PAINT	mg / cm ^2	LOCKERS	METAL	C	INTACT	FIRST	CAF KITCHEN	Negative	0	0.02
29	PAINT	mg / cm ^2	RADIATOR	METAL	D	INTACT	FIRST	CAF KITCHEN	Negative	0.3	0.4
30	PAINT	mg / cm ^2	WALL	CONCRETE	B	INTACT	FIRST	8	Negative	0	0.02
31	PAINT	mg / cm ^2	WALL	CONCRETE	C	INTACT	FIRST	8	Negative	0.24	0.26
32	PAINT	mg / cm ^2	PIPE	METAL	C	INTACT	FIRST	8	Negative	< LOD	0
33	PAINT	mg / cm ^2	WALL	CERAMIC	D	INTACT	FIRST	8	Negative	0.05	0.06
34	PAINT	mg / cm ^2	WINDOW	METAL	D	PEELING	FIRST	8	Negative	0.26	0.4
35	PAINT	mg / cm ^2	WINDOW FRAME	METAL	D	PEELING	FIRST	8	Negative	< LOD	0
36	PAINT	mg / cm ^2	DOOR	WOOD	B	INTACT	FIRST	8	Negative	0.03	0.12
37	PAINT	mg / cm ^2	DOOR FRAME	METAL	B	INTACT	FIRST	8	Negative	0.23	0.41
38	PAINT	mg / cm ^2	DOOR JAMB	METAL	B	INTACT	FIRST	8	Negative	0.1	0.16
39	PAINT	mg / cm ^2	WALL	CONCRETE	A	INTACT	FIRST	CLINIC, RM 13	Negative	< LOD	0
40	PAINT	mg / cm ^2	RADIATOR	METAL	C	INTACT	FIRST	CLINIC, RM 13	Negative	0.1	0.27
40	PAINT	mg / cm ^2	DIVIDER	METAL		INTACT	FIRST	CLINIC, RM 13	Negative	0.1	0.25

Meadowbrook Elementary School
Representative XRF Lead-Based Paint Inspection

Reading No	Type	Units	Component	Substrate	Side	Condition	Floor	Room	Results	PbC	PbC Error
41	PAINT	mg / cm ^2	WALL	CONCRETE	B	INTACT	FIRST	RM 10	Negative	0.11	0.86
42	PAINT	mg / cm ^2	WALL	CONCRETE	D	INTACT	FIRST	RM 10	Negative	0.02	0.07
43	PAINT	mg / cm ^2	WINDOW	METAL	D	INTACT	FIRST	RM 10	Negative	0.14	0.33
44	PAINT	mg / cm ^2	WINDOW FRAME	METAL	D	INTACT	FIRST	RM 10	Negative	< LOD	0
45	PAINT	mg / cm ^2	DOOR	WOOD	B	INTACT	FIRST	RM 10	Negative	0.15	0.54
46	PAINT	mg / cm ^2	DOOR FRAME	METAL	B	INTACT	FIRST	RM 10	Negative	0.17	0.4
47	PAINT	mg / cm ^2	DOOR JAMB	METAL	B	FAIR	FIRST	RM 10	Negative	0.04	0.09
48	PAINT	mg / cm ^2	CABINET	WOOD	C	INTACT	FIRST	RM 10	Negative	0.5	0.4
49	PAINT	mg / cm ^2	CABINET	WOOD	A	INTACT	FIRST	RM 11	Negative	0.19	0.35
50	PAINT	mg / cm ^2	DOOR	METAL	A	INTACT	FIRST	LOBBY	Negative	0.4	0.3
51	PAINT	mg / cm ^2	DOOR FRAME	METAL	A	FAIR	FIRST	LOBBY	Negative	0.4	0.4
52	PAINT	mg / cm ^2	DOOR JAMB	METAL	A	FAIR	FIRST	LOBBY	Negative	0.5	0.5
53	PAINT	mg / cm ^2	WALL	CONCRETE	A	INTACT	SECOND	HALL	Negative	0	0.02
54	PAINT	mg / cm ^2	RADIATOR	METAL	A	INTACT	SECOND	HALL	Negative	0.4	0.4
55	PAINT	mg / cm ^2	WINDOW	METAL	B	INTACT	SECOND	HALL	Negative	0.5	0.4
56	PAINT	mg / cm ^2	WINDOW FRAME	METAL	A	INTACT	SECOND	HALL	Negative	0.5	0.3
57	PAINT	mg / cm ^2	WALL	CONCRETE	D	INTACT	SECOND	29	Negative	0.21	0.22
58	PAINT	mg / cm ^2	WALL	CONCRETE	A	INTACT	SECOND	29	Negative	0	0.02
59	PAINT	mg / cm ^2	RADIATOR	METAL	B	INTACT	SECOND	29	Negative	0.18	0.29
60	PAINT	mg / cm ^2	WINDOW	METAL	B	INTACT	SECOND	29	Negative	0.4	0.6
61	PAINT	mg / cm ^2	WINDOW FRAME	METAL	B	INTACT	SECOND	29	Negative	0.5	0.4
62	PAINT	mg / cm ^2	DOOR	WOOD	D	INTACT	SECOND	29	Negative	0.01	0.05
63	PAINT	mg / cm ^2	DOOR FRAME	METAL	D	INTACT	SECOND	29	Negative	0.6	0.3
64	PAINT	mg / cm ^2	DOOR JAMB	METAL	D	FAIR	SECOND	29	Negative	0.4	0.5
65	PAINT	mg / cm ^2	DOOR	WOOD	B	INTACT	SECOND	26	Negative	0.01	0.04
66	PAINT	mg / cm ^2	DOOR FRAME	METAL	B	INTACT	SECOND	26	Negative	0.5	0.5
67	PAINT	mg / cm ^2	DOOR JAMB	METAL	B	INTACT	SECOND	26	Negative	0.7	0.3
68	PAINT	mg / cm ^2	COLUMN	PRESSBOARD		INTACT	SECOND	26	Negative	0.01	0.05
69	PAINT	mg / cm ^2	PIPE	METAL	C	INTACT	SECOND	26	Negative	< LOD	0
70	PAINT	mg / cm ^2	DUCT	METAL	C	POOR	SECOND	26	Negative	0.13	0.28
71	PAINT	mg / cm ^2	RADIATOR	METAL	D	FAIR	SECOND	26	Negative	0.26	0.4
72	PAINT	mg / cm ^2	WALL	CONCRETE	D	INTACT	SECOND	27	Negative	0	0.02
73	PAINT	mg / cm ^2	WALL	CONCRETE	B	INTACT	SECOND	27	Negative	0.03	0.1
74	PAINT	mg / cm ^2	WINDOW	METAL	D	FAIR	SECOND	27	Negative	0.08	0.2
75	PAINT	mg / cm ^2	WINDOW FRAME	METAL	D	POOR	SECOND	27	Negative	< LOD	0
76	PAINT	mg / cm ^2	WINDOW SILL	CONCRETE	D	INTACT	SECOND	27	Negative	0.1	0.19
77	PAINT	mg / cm ^2	BOOKSHELF	WOOD	B	FAIR	SECOND	27	Negative	0.01	0.04
78	PAINT	mg / cm ^2	RADIATOR	METAL	D	INTACT	SECOND	27	Negative	0.13	0.24
79	PAINT	mg / cm ^2	PIPE	METAL	C	INTACT	SECOND	27	Negative	< LOD	0
80	PAINT	mg / cm ^2	WALL	CERAMIC	C	INTACT		STAIRWELL	Positive	1.2	0.2

Meadowbrook Elementary School
Representative XRF Lead-Based Paint Inspection

Reading No	Type	Units	Component	Substrate	Side	Condition	Floor	Room	Results	PbC	PbC Error
81	PAINT	mg / cm ^2	RISER	METAL		INTACT		STAIRWELL	Negative	0.2	0.24
82	PAINT	mg / cm ^2	STRINGER	METAL		INTACT		STAIRWELL	Negative	0.27	0.35
83	PAINT	mg / cm ^2	BALUSTERS	METAL		INTACT		STAIRWELL	Negative	0.4	0.4
84	PAINT	mg / cm ^2	NEWEL POST	METAL		POOR		STAIRWELL	Negative	0.5	0.5
85	PAINT	mg / cm ^2	CAL						Negative	0.7	0.2
86	PAINT	mg / cm ^2	CAL						Positive	4.1	2.6
87	PAINT	mg / cm ^2	CAL						Positive	1.7	0.5
88	SHUTTER	cal									
89	PAINT	mg / cm ^2	CAL						Positive	4.7	0
90	PAINT	mg / cm ^2	CAL						Positive	3.9	2.5
91	PAINT	mg / cm ^2	CAL						Positive	1.6	0.5
92	PAINT	mg / cm ^2	WALL	CERAMIC	A	INTACT	FIRST	HALL	Negative	0.4	0.3
93	PAINT	mg / cm ^2	WALL	PLASTER	C	INTACT	FIRST	HALL	Negative	0.01	0.03
94	PAINT	mg / cm ^2	WALL	PLASTER	B	POOR	FIRST	6	Negative	0	0.92
95	PAINT	mg / cm ^2	WALL	PLASTER	C	POOR	FIRST	6	Negative	0.06	0.05
96	PAINT	mg / cm ^2	WALL	PLASTER	C	POOR	FIRST	6	Negative	0.01	0.03
97	PAINT	mg / cm ^2	WALL	WOOD	A	INTACT	FIRST	6	Negative	0.02	0.03
98	PAINT	mg / cm ^2	BASEBOARD	WOOD	B	INTACT	FIRST	6	Negative	0	0.02
99	PAINT	mg / cm ^2	BASEBOARD	METAL	C	INTACT	FIRST	6	Negative	0.03	0.08
100	PAINT	mg / cm ^2	WINDOW FRAME	WOOD	C	INTACT	FIRST	6	Negative	0.11	0.24
101	PAINT	mg / cm ^2	WINDOW SILL	METAL	C	INTACT	FIRST	6	Negative	0.11	0.25
102	PAINT	mg / cm ^2	RADIATOR	WOOD	A	INTACT	FIRST	6	Negative	0.6	0.4
103	PAINT	mg / cm ^2	DOOR FRAME	WOOD	A	INTACT	FIRST	6	Negative	0.14	0.36
104	PAINT	mg / cm ^2	DOOR JAMB	WOOD	A	INTACT	FIRST	6	Negative	0.29	0.52
105	PAINT	mg / cm ^2	WALL	BRICK	C	INTACT	FIRST	LIBRARY	Negative	0.02	0.05
106	PAINT	mg / cm ^2	WALL	CONCRETE	B	INTACT	FIRST	LIBRARY	Negative	0.03	0.1
107	PAINT	mg / cm ^2	WINDOW	METAL	A	INTACT	FIRST	LIBRARY	Negative	0.22	0.41
108	PAINT	mg / cm ^2	WINDOW FRAME	METAL	A	INTACT	FIRST	LIBRARY	Negative	0.07	0.22
109	PAINT	mg / cm ^2	BOOKSHELF	WOOD	C	INTACT	FIRST	LIBRARY	Negative < LOD		0
110	PAINT	mg / cm ^2	BOOKSHELF	WOOD	D	INTACT	FIRST	LIBRARY	Negative	0.04	0.14
111	PAINT	mg / cm ^2	DOOR FRAME	METAL	C	INTACT	FIRST	LIBRARY	Negative	0.01	0.04
112	PAINT	mg / cm ^2	DOOR JAMB	METAL	C	INTACT	FIRST	LIBRARY	Negative	0.09	0.28
113	SHUTTER	cal		CERAMIC	B	INTACT	FIRST	MULTIPURPOSE	Negative	0.03	0.09
114	PAINT	mg / cm ^2	CAL							5.3	0
115	PAINT	mg / cm ^2	CAL						Positive	4.6	3
116	PAINT	mg / cm ^2	CAL						Positive	1.5	0.4
117	PAINT	mg / cm ^2	WALL	PLASTER	B	INTACT	FIRST	GIRLS LOCKER ROOM	Negative	0.29	0.24
118	PAINT	mg / cm ^2	WALL	PLASTER	C	INTACT	FIRST	GIRLS LOCKER ROOM	Negative	0	0.02
119	PAINT	mg / cm ^2	RADIATOR	METAL	C	INTACT	FIRST	GIRLS LOCKER ROOM	Negative	0.08	0.08
120	PAINT	mg / cm ^2	DOOR	WOOD	A	INTACT	FIRST	JANITOR CLOSET	Negative	0.05	0.12
									Negative	0.01	0.06

Meadowbrook Elementary School
Representative XRF Lead-Based Paint Inspection

Reading No	Type	Units	Component	Substrate	Side	Condition	Floor	Room	Results	PbC	PbC Error
121	PAINT	mg / cm ^2	DOOR FRAME	WOOD	A	INTACT	FIRST	JANITOR CLOSET	Negative	0.03	0.09
122	PAINT	mg / cm ^2	DOOR JAMB	WOOD	A	INTACT	FIRST	JANITOR CLOSET	Negative	0.02	0.06
123	PAINT	mg / cm ^2	PIPE	METAL	C	INTACT	FIRST	JANITOR CLOSET	Negative	0	0.02
124	PAINT	mg / cm ^2	RADIATOR	METAL	B	INTACT	FIRST	JANITOR CLOSET	Negative	0.2	0.29
125	PAINT	mg / cm ^2	DOOR	WOOD	A	INTACT	FIRST	JANITOR CLOSET	Negative	0.04	0.13
126	PAINT	mg / cm ^2	DOOR FRAME	WOOD	A	INTACT	FIRST	JANITOR CLOSET	Negative	0.11	0.33
127	PAINT	mg / cm ^2	WALL	BRICK	A	POOR	FIRST	BOILER ROOM ROOM	Negative	0.16	0.1
128	PAINT	mg / cm ^2	DOOR	METAL	D	POOR	FIRST	BOILER ROOM	Positive	14.3	10.6
129	PAINT	mg / cm ^2	DOOR FRAME	METAL	D	POOR	FIRST	BOILER ROOM	Positive	8.1	4.7
130	PAINT	mg / cm ^2	DOOR JAMB	METAL	D	POOR	FIRST	BOILER ROOM	Positive	9.1	7.7
131	PAINT	mg / cm ^2	WALL	BRICK	C	FAIR	FIRST	BOILER ROOM	Negative	0	0.02
132	PAINT	mg / cm ^2	WALL	BRICK	A	INTACT	FIRST	BOILER ROOM	Negative	0	0.02
133	PAINT	mg / cm ^2	WINDOW FRAME	WOOD	A	INTACT	FIRST	BOILER ROOM	Positive	9.9	8.8
134	PAINT	mg / cm ^2	WINDOW SILL	WOOD	A	INTACT	FIRST	BOILER ROOM	Positive	10.1	8.8
135	PAINT	mg / cm ^2	WALL	PLASTER	B	POOR	FIRST	BOILER ROOM	Negative	0.15	0.12
136	PAINT	mg / cm ^2	WALL	PLASTER	D	POOR	FIRST	1	Negative	0.4	0.2
137	PAINT	mg / cm ^2	WINDOW FRAME	WOOD	B	INTACT	FIRST	1	Negative	0.18	0.32
138	PAINT	mg / cm ^2	WINDOW SILL	WOOD	B	INTACT	FIRST	1	Negative	0.21	0.38
139	PAINT	mg / cm ^2	RADIATOR	METAL	B	INTACT	FIRST	1	Positive	1.3	0.3
140	PAINT	mg / cm ^2	PIPE	METAL	B	INTACT	FIRST	1	Negative	0.02	0.05
141	PAINT	mg / cm ^2	DOOR	WOOD	D	INTACT	FIRST	1	Negative	0.01	0.04
142	PAINT	mg / cm ^2	DOOR FRAME	WOOD	D	POOR	FIRST	1	Negative	0.25	0.38
143	PAINT	mg / cm ^2	DOOR JAMB	WOOD	D	POOR	FIRST	1	Negative	0.4	0.4
144	PAINT	mg / cm ^2	WALL	PLASTER	A	FAIR	FIRST	3	Negative	0.6	0.4
145	PAINT	mg / cm ^2	RADIATOR	METAL	B	INTACT	FIRST	3	Negative	0.6	0.4
146	PAINT	mg / cm ^2	WINDOW FRAME	WOOD	B	INTACT	FIRST	3	Negative	0.26	0.55
147	PAINT	mg / cm ^2	WINDOW SILL	WOOD	B	INTACT	FIRST	3	Negative	0.4	0.2
148	PAINT	mg / cm ^2	RISER	METAL	B	INTACT		STAIRWELL	Positive	4.6	3.1
149	PAINT	mg / cm ^2	RISER	METAL	B	INTACT		STAIRWELL	Negative	0.4	0.4
150	PAINT	mg / cm ^2	STRINGER	METAL	A	POOR		STAIRWELL	Positive	4.6	2.7
151	PAINT	mg / cm ^2	BALUSTER	METAL	A	FAIR		STAIRWELL	Positive	2.4	1.4
152	PAINT	mg / cm ^2	NEWEL POST	METAL	A	INTACT		STAIRWELL	Positive	3.3	1.8
153	PAINT	mg / cm ^2	RADIATOR	METAL	B	INTACT		STAIRWELL	Positive	2	1
154	PAINT	mg / cm ^2	WALL	PLASTER	C	INTACT		STAIRWELL	Negative	0.5	0.4
155	PAINT	mg / cm ^2	WALL	PLASTER	C	INTACT	SECOND	19	Negative	0	0.02
156	PAINT	mg / cm ^2	DOOR	WOOD	D	INTACT	SECOND	21	Negative	0.01	0.04
157	PAINT	mg / cm ^2	DOOR FRAME	WOOD	D	INTACT	SECOND	21	Negative	0.4	0.5
158	PAINT	mg / cm ^2	DOOR JAMB	WOOD	D	INTACT	SECOND	21	Negative	0.4	0.5
159	PAINT	mg / cm ^2	WINDOW FRAME	WOOD	B	INTACT	SECOND	22	Negative	0.4	0.6
160	PAINT	mg / cm ^2	WINDOW SILL	WOOD	B	INTACT	SECOND	22	Negative	0.5	0.5

Meadowbrook Elementary School
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Reading No	Type	Units	Component	Substrate	Side	Condition	Floor	Room	Results	PbC	PbC Error
161	PAINT	mg / cm ^2	RADIATOR	METAL	D	INTACT	SECOND	24	Negative	0.4	0.4
162	PAINT	mg / cm ^2	WALL	PLASTER	A	INTACT	SECOND	24	Negative	0	0.02
163	PAINT	mg / cm ^2	WALL	PLASTER	B	INTACT	SECOND	24	Positive	2	0.9
164	PAINT	mg / cm ^2	WALL	CONCRETE	A	INTACT	FIRST	OUTSIDE	Negative	0	0.02
165	PAINT	mg / cm ^2	WALL	CONCRETE	B	INTACT	FIRST	OUTSIDE	Negative	0.03	0.09
166	PAINT	mg / cm ^2	WALL	CONCRETE	B	INTACT	FIRST	OUTSIDE	Negative	0.02	0.03
167	PAINT	mg / cm ^2	WALL	CONCRETE	D	INTACT	FIRST	OUTSIDE	Negative	0.01	0.03
168	PAINT	mg / cm ^2	WALL	CONCRETE	D	INTACT	FIRST	OUTSIDE	Negative	0	0.02
169	PAINT	mg / cm ^2	WINDOW	METAL	A	INTACT	FIRST	OUTSIDE	Negative	0.8	0.2
170	PAINT	mg / cm ^2	WINDOW SILL	CONCRETE	A	INTACT	FIRST	OUTSIDE	Negative	0.03	0.02
171	PAINT	mg / cm ^2	WINDOW	METAL	B	POOR	FIRST	OUTSIDE	Positive	1	0.3
172	PAINT	mg / cm ^2	WINDOW	METAL	B	POOR	FIRST	OUTSIDE	Positive	1.7	0.7
173	PAINT	mg / cm ^2	WINDOW FRAME	METAL	B	POOR	FIRST	OUTSIDE	Positive	1.3	0.2
174	PAINT	mg / cm ^2	WINDOW SILL	CONCRETE	B	INTACT	FIRST	OUTSIDE	Negative	0.07	0.13
175	PAINT	mg / cm ^2	WINDOW	METAL	D	INTACT	FIRST	OUTSIDE	Positive	1.1	0.2
176	PAINT	mg / cm ^2	WINDOW FRAME	METAL	D	INTACT	FIRST	OUTSIDE	Positive	1.7	0.7
177	PAINT	mg / cm ^2	WINDOW SILL	CONCRETE	D	INTACT	FIRST	OUTSIDE	Negative	0.05	0.05
178	PAINT	mg / cm ^2	DOOR	WOOD	A	INTACT	FIRST	OUTSIDE	Positive	1.6	0.6
179	PAINT	mg / cm ^2	DOOR FRAME	METAL	A	INTACT	FIRST	OUTSIDE	Negative	0.7	0.2
180	PAINT	mg / cm ^2	DOOR	WOOD	B	FAIR	FIRST	OUTSIDE	Positive	2.5	1.3
181	PAINT	mg / cm ^2	DOOR FRAME	METAL	B	INTACT	FIRST	OUTSIDE	Negative	0.8	0.2
182	PAINT	mg / cm ^2	DOOR	METAL	C	INTACT	FIRST	OUTSIDE	Negative	0	0.02
183	PAINT	mg / cm ^2	DOOR FRAME	METAL	C	INTACT	FIRST	OUTSIDE	Negative	0	0.02
184	PAINT	mg / cm ^2	DOOR	WOOD	D	INTACT	FIRST	OUTSIDE	Positive	1.7	0.6
185	PAINT	mg / cm ^2	DOOR FRAME	METAL	D	INTACT	FIRST	OUTSIDE	Negative	0.5	0.4
186	PAINT	mg / cm ^2	WALL	CONCRETE	A	INTACT	FIRST	OUTSIDE	Negative	0.01	0.03
187	PAINT	mg / cm ^2	WALL	CONCRETE	B	INTACT	FIRST	OUTSIDE	Negative	0.5	0.5
188	PAINT	mg / cm ^2	WALL	CONCRETE	C	INTACT	FIRST	OUTSIDE	Negative	0.03	0.07
189	PAINT	mg / cm ^2	WALL	CONCRETE	D	INTACT	FIRST	OUTSIDE	Negative	0.05	0.06
190	PAINT	mg / cm ^2	DOOR	METAL	A	FAIR	FIRST	OUTSIDE	Negative	0	0.02
191	PAINT	mg / cm ^2	DOOR FRAME	WOOD	A	POOR	FIRST	OUTSIDE	Positive	15.2	10.9
192	PAINT	mg / cm ^2	DOOR	WOOD	B	POOR	FIRST	OUTSIDE	Negative	0	0.04
193	PAINT	mg / cm ^2	DOOR FRAME	WOOD	B	INTACT	FIRST	OUTSIDE	Positive	21.7	14.7
194	PAINT	mg / cm ^2	DOOR	WOOD	C	FAIR	FIRST	OUTSIDE	Positive	23.7	15
195	PAINT	mg / cm ^2	DOOR FRAME	WOOD	C	INTACT	FIRST	OUTSIDE	Positive	21.7	14.4
196	PAINT	mg / cm ^2	TREAD	METAL	A	POOR	FIRST	OUTSIDE	Negative	0.02	0.06
197	PAINT	mg / cm ^2	RISER	METAL	A	POOR	FIRST	OUTSIDE	Negative	0.03	0.13
198	PAINT	mg / cm ^2	STRINGER	METAL	A	INTACT	FIRST	OUTSIDE	Negative	0.01	0.05
199	PAINT	mg / cm ^2	CAL						Positive	3	1.3
200	PAINT	mg / cm ^2	CAL						Positive	1.6	0.5

Meadowbrook Elementary School
Representative XRF Lead-Based Paint Inspection

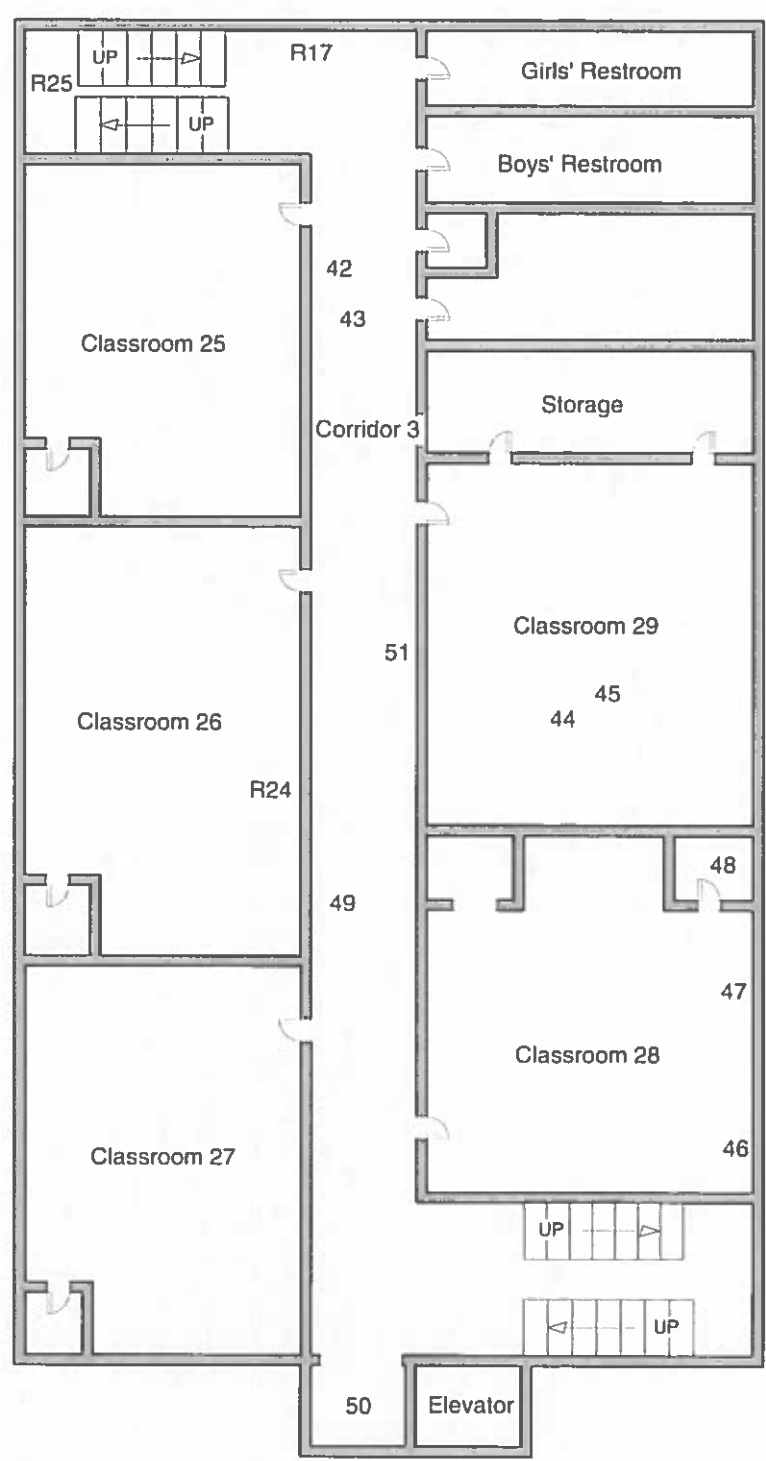
Reading No	Type	Units	Component	Substrate	Side	Condition	Floor	Room	Results	PbC	PbC Error
201	PAINT	mg / cm ^2	CAL						Negative	0.3	0.24

APPENDIX C – SAMPLE LOCATION DRAWINGS

Drawing Not To Scale
April 29, 2015

Asbestos Inspection
Sample Location Diagram
Meadowbrooke Elementary
Norfolk, VA

2nd Floor West Wing

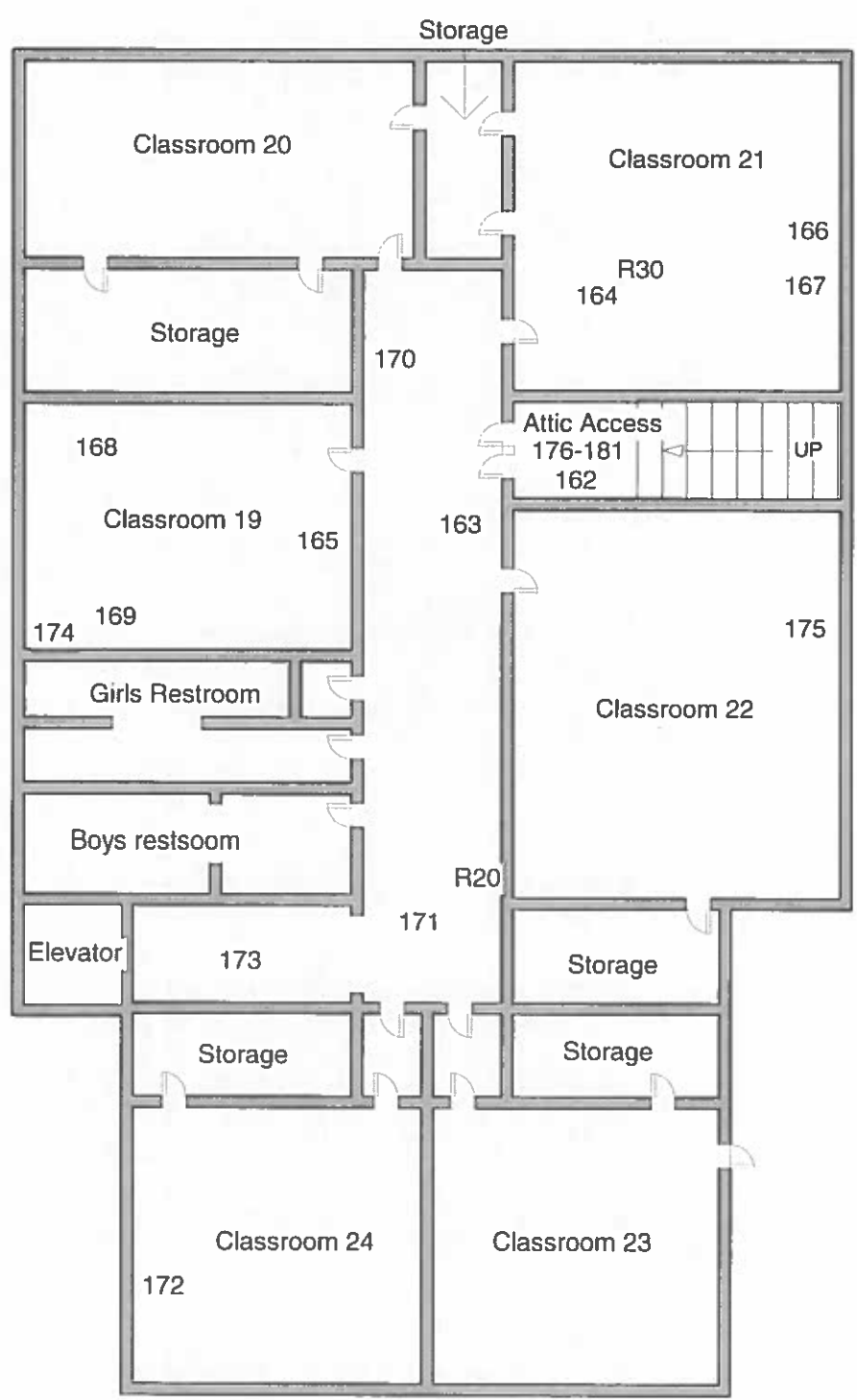


KEY
= Sample Location
R = Retesting Area

Drawing Not To Scale
April 29, 2015

Asbestos Inspection
Sample Location Diagram
Meadowbrooke Elementary
Norfolk, VA

2nd Floor East Wing

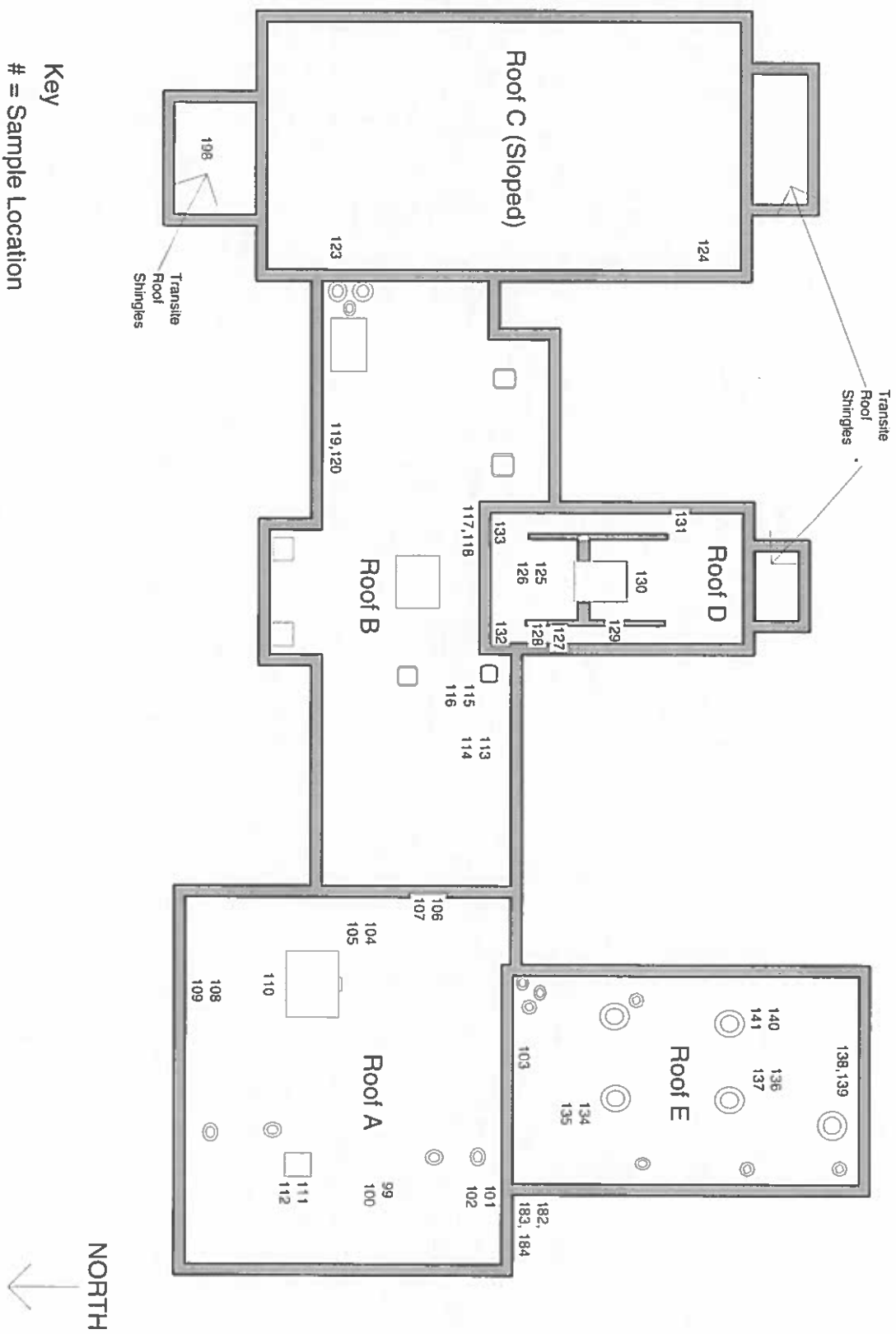


KEY:
= Sample Location
R = Retesting Area

Drawing Not To Scale
April 29, 2015

Former Meadowbrook Elementary

Roof Diagram



April 2, 2015

APPENDIX D – UNDERGROUND FUEL STORAGE TANK SUMMARY

**STOKES
ENVIRONMENTAL
ASSOCIATES, LTD.**

13 April 201

Mr. William Clendenin
City of Norfolk
2840 Dana Street
Norfolk, Virginia 23509

Re: Possible Underground Storage Tank Investigation
Meadowbrooke School
7620 Shirland Avenue
Norfolk, Virginia

Dear Mr. Clendenin;

At your request, we have performed an investigation for a possible underground storage tank (UST) at the Meadowbrooke School at the above address. Our investigation consisted of a physical inspection of the facility for evidence of a tank, physical probing of suspect areas with a soil probe, and utilizing Ground Penetrating Radar (GPR) to search for underground features consistent with a UST.

The boiler room serving the school was closely inspected for the presence of oil-fired equipment or features suggesting previous use of oil burning equipment. It was found that the existing boilers (two) were set up as dual fuel boilers (oil or natural gas). Based on features of the piping and the presence of a typical natural gas piping, meters, and valves on the exterior wall of the boiler room, the system currently utilizes natural gas. However, on the north wall, a 5-inch diameter pipe containing 3, ¾-inch pipes sheared off at the wall was observed. These looked like possible oil pipes which might have been previously used to supply the system (one pipe to supply each boiler, and a combined return line). Based on the presence of dual fuel boilers and the possible oil transmission lines, it was considered reasonably likely that oil was once used to fuel the boilers.

The area outside of the boiler room on the north side of the building was investigated for evidence of existing or prior heating oil tanks, which could have been above-ground or underground storage tanks (ASTs or USTs). No conclusive evidence, such as tank supports, vent lines, fill ports, patched surface areas, or sunken areas were observed. A 4-foot tile probe was used to probe likely areas, but no obstructions consistent with a UST were observed. Finally, GPR and an operator were retained. The GPR was used to sweep the area to the north of the building all the way to the wall on the northern border of the site. While no features consistent with an existing UST were found, a 10 foot by 18 foot area extending northward from the north exterior wall of the school which contained debris and disturbed soil was encountered. The size and shape of this area are consistent with an excavation resulting from removal of a UST, and backfill with soil and debris. The location of this area is indicated on the attached site aerial photograph.

Mr. William Clendenin
Possible Fuel Tank Investigation
Meadowbrooke School
13 April 2015
Page 2

We conclude based on the presence of dual fuel boilers in the boiler room, the severed oil transmission lines, and the disturbed area just to the north of the boiler room, the a UST likely containing heating oil was previously located on the subject site. The tank was likely removed around the time the system was switched to natural gas.

While we conclude that a tank was removed from the site, it is unknown whether any releases may have occurred from the tank. If during site demolition activities evidence of petroleum contamination is encountered, contaminated soils should be assessed, and removed if necessary to facilitate cleanup of the site.

We would be happy to assist you with further assessment of this possible tank if necessary.

If you have any questions, or need additional information, please call.

Sincerely;
Stokes Environmental Associates, Ltd.



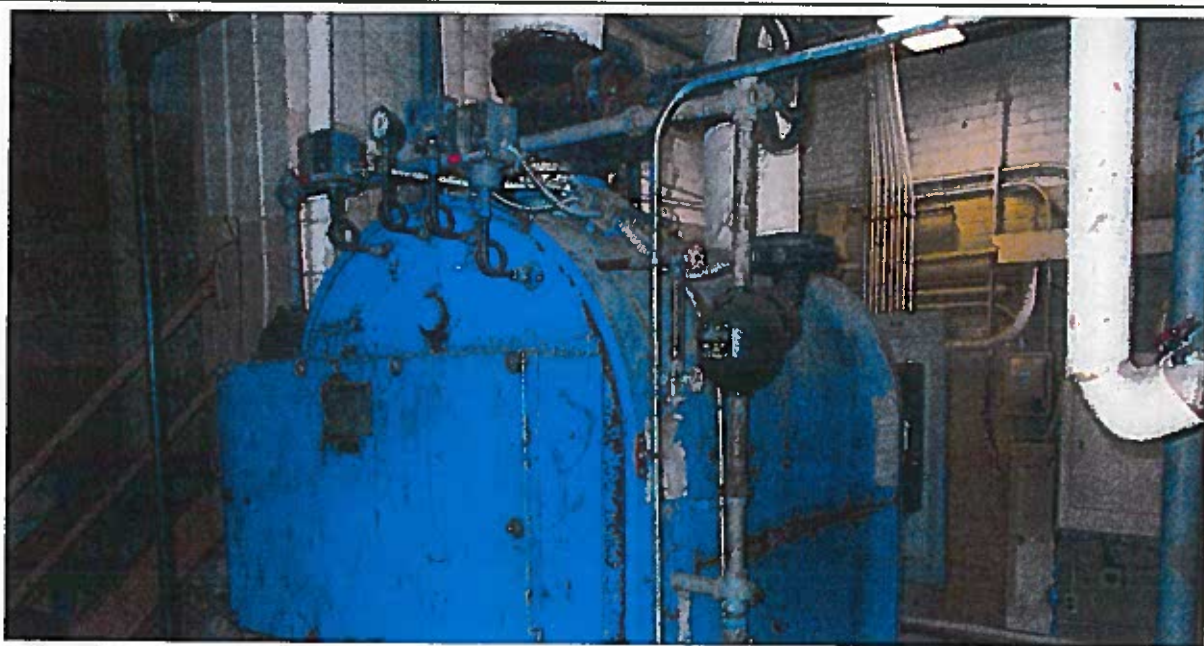
David A. Balsley, Project Manager
Senior Environmental Scientist

Enclosure: Site Photographs
Site Aerial Photograph with possible tank location

DAB/15-10808/C:\MyDocuments\MeadowbrookeUST.RPT.wd



Photograph 1: View of possible oil transmission lines on north side of the boiler room.



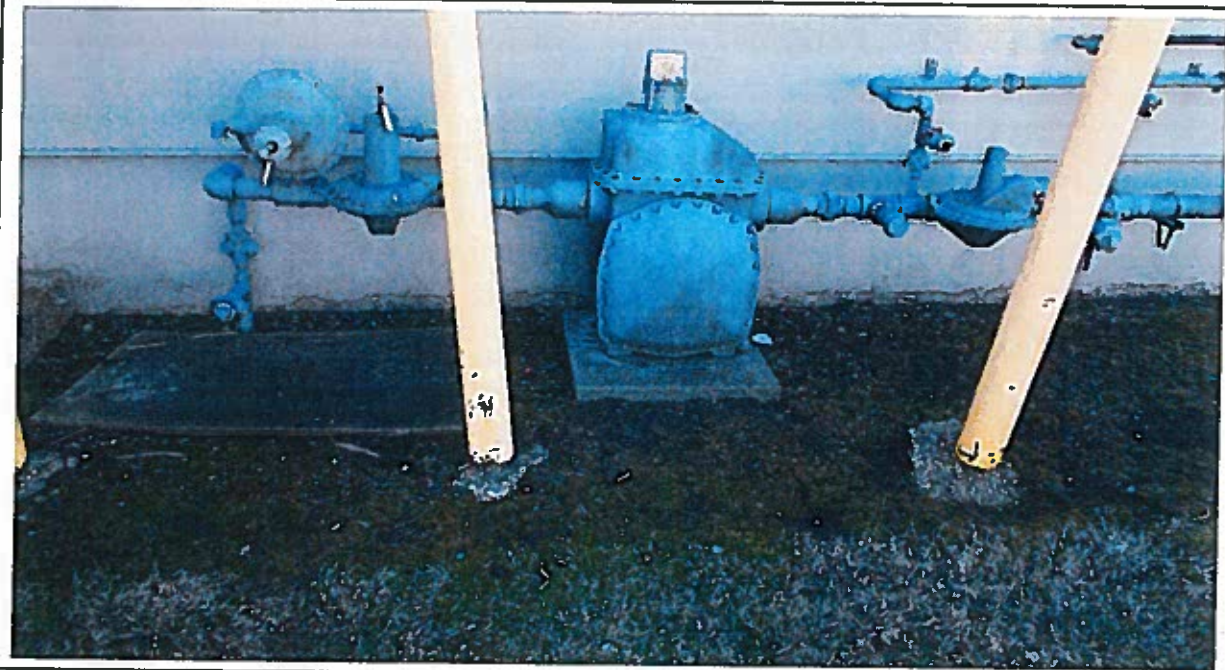
Photograph 2: View dual-fuel boiler in the boiler room. The boiler appears to be original to the building.

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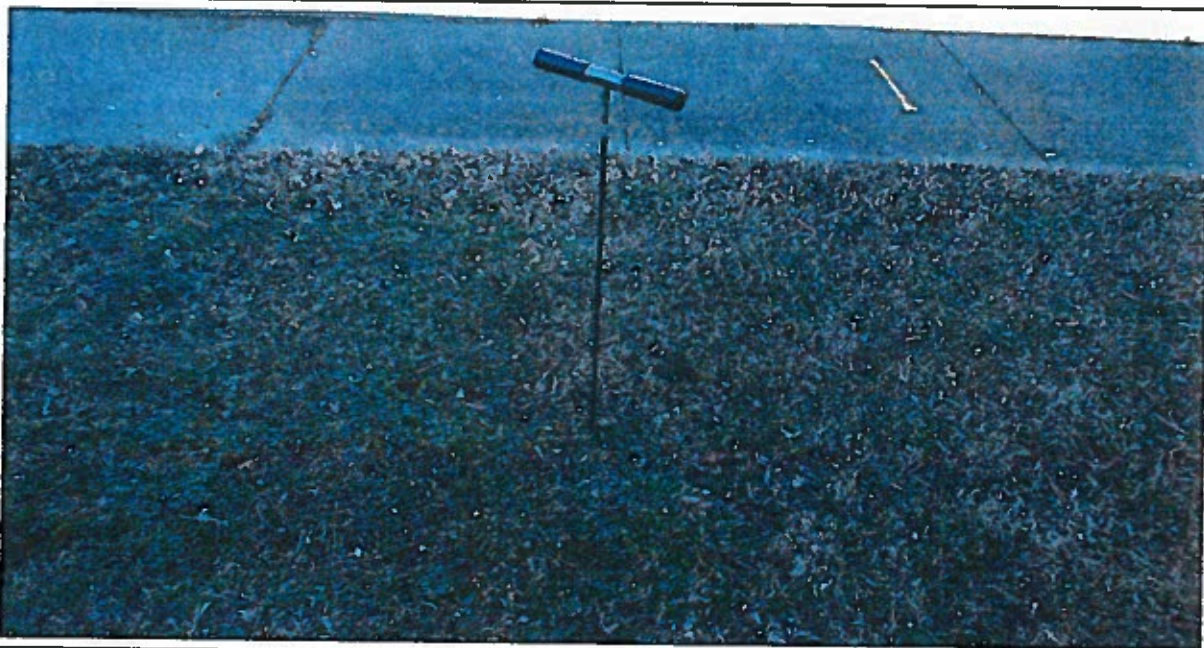
Project Name:
Date:
Project Number:

SITE PHOTOGRAPHS

MEADOWBROOKE SCHOOL
Norfolk, Virginia
April 2015
15-10808



Photograph 1: View of existing gas meter on the north exterior wall of the boiler room.



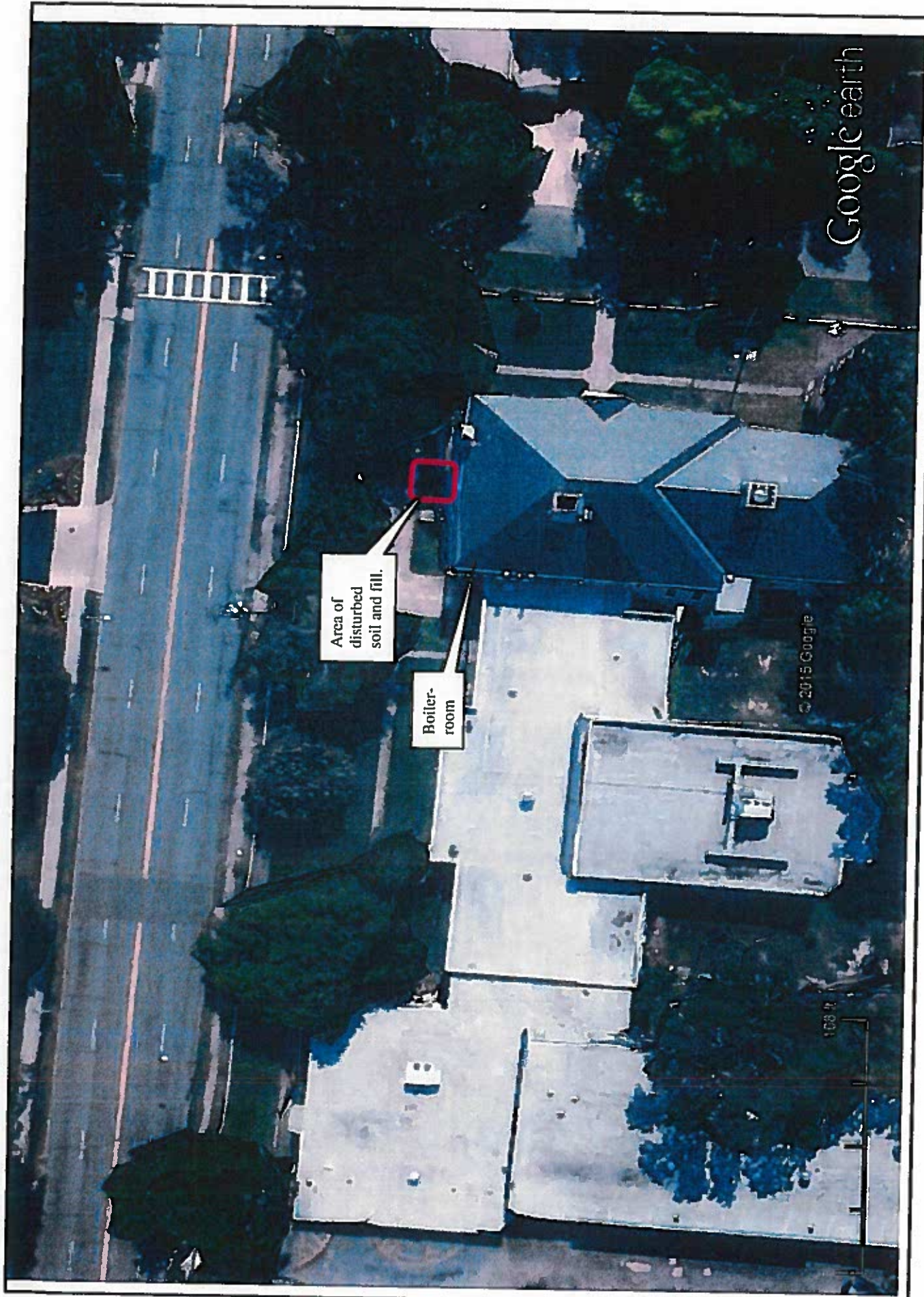
Photograph 2: View grassy area which may have previously contained an underground storage tank on north side of building.

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ENVIRONMENTAL
ASSOCIATES, LTD.**

Project Name:
Date:
Project Number:

SITE PHOTOGRAPHS

MEADOWBROOKE SCHOOL
Norfolk, Virginia
April 2015
15-10808



**STOKES
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ASSOCIATES, LTD.**

SITE AERIAL PHOTOGRAPH - POSSIBLE FORMER TANK LOCATION
MEADOWBROOKE SCHOOL, NORFOLK, VIRGINIA

PROJECT NAME:
PROJECT NUMBER: 15-10808
DATE: April 2015
SOURCE: Google Earth image, 2015

**APPLIED
LABORATORY
SERVICES**

**ASBESTOS ABATEMENT
SPECIFICATION**

**MEADOWBROOKE ELEMENTARY SCHOOL
7620 SHIRLAND AVENUE
NORFOLK, VIRGINIA 23505**

Prepared For:

The City of Norfolk
Bureau of Construction
810 Union Street / 700 City Hall Bldg.
Norfolk, Virginia 23510

Prepared By:



Paul D. Thomas
Virginia Project Designer # 3305000966
Applied Laboratory Services, L.L.C.
4101 Granby Street, Suite 404
Norfolk, Virginia 23504
Phone: (757) 623-0121
Fax: (757) 623-2785

May 6, 2015

**"FORMER" MEADOW BROOK ELEMENTARY SCHOOL
NORFOLK, VIRGINIA**

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The work covered by this Section includes furnishing all required plant, labor, equipment, materials, and transportation necessary for the proper and safe removal, handling, demolition and disposal of friable and non-friable asbestos-containing materials (ACM) during this project. Work shall be performed in accordance with applicable government regulations, and as specified in this Section and as indicated on any accompanying Design Plans, Reports, Drawings and specification sections.

1.2 ASBESTOS-RELATED WORK

- A. Demolition, removal, and disposal of Friable and Non-Friable Asbestos Containing and Asbestos Contaminated Materials in support of demolition activities. The following table outlines asbestos-containing materials (ACM) to be removed in support of demolition activities.
- B. The Hazardous Materials Inspection Report is attached in the appendices of this specification section in support of future demolition activities. The report contains findings information, analytical results and sample location drawings.

Material/ Description	Material/ Location	Friability	%, Type Asbestos and Condition	Homog. Quantity	Removal Requirement
Textured Ceiling Plaster	Throughout 1 st and 2 nd floor 1918 portion of building, cafeteria and the media center	Friable	2% - 4% Chrysotile, Good	22,850sf	Negative Pressure Enclosure
Textured Ceiling Plaster	Exterior Canopies/Overhangs 1918 portion of building (10 total)	Friable	2% Chrysotile, Good	365sf	Negative Pressure Enclosure
2"-4" O.D. Pipe Insulation	Above Plaster Ceiling Kitchen & Cafeteria	Friable	35% Chrysotile, Localized Damaged	490lf	Negative Pressure Enclosure or Glove bag Removal
4"-6" O.D. Pipe Insulation	Above Plaster Ceiling Kitchen & Cafeteria	Friable	25% Chrysotile, 10% Amosite, Localized Damaged	720lf	Negative Pressure Enclosure or Glove bag Removal

**"FORMER" MEADOW BROOK ELEMENTARY SCHOOL
NORFOLK, VIRGINIA**

Material/ Description	Material/ Location	Friability	%, Type Asbestos and Condition	Homog. Quantity	Removal Requirement
6"-8" O.D. Pipe Insulation	Attic, East Wing, 1954 Portion	Friable	25% Chrysotile, Good	380lf	Negative Pressure Enclosure or Glove bag Removal
2"-4" O.D. Pipe Insulation	1954 Portion, Trench/Crawl Area	Friable	30% Chrysotile, <1% Crocidolite, Significant Damage	Approx. 1,056lf	Negative Pressure Enclosure
Asbestos Contaminated Soil	1954 Portion , Pipe Trenches/Crawl Area	Friable	Chrysotile, and Crocidolite from Significant Damage pipe insulation	Approx. 2,112sf	Negative Pressure Enclosure
Stucco/Plaster	Exterior Walls, 1918 portion of the building	Friable	2% Chrysotile, Good	8,612sf	Negative Pressure Enclosure
Various floor tiles and associated mastic adhesive	Refer to summary note below for specific locations	Non- Friable	3% and 5% Chrysotile, Good	18,980sf	Regulated Work Area
Mastic adhesive	Associated with carpeting, classroom #8 and Media Center	Non- Friable	3%-5% Chrysotile, Good	2,690sf	Regulated Work Area,
Mastic adhesive associated with cove base	Throughout classrooms West Wing 1 st and 2 nd floors and the Media Center	Non- Friable	5% Chrysotile, Good	1,464lf	Regulated Work Area,
Cementitious (Transite) Pipe	Water Heater Vent Pipe, Kitchen Utility Rm.	Non- Friable	15% Chrysotile, Good	6lf	Regulated Work Area, Intact Removal
Cementitious (Transite) Chalkboards	Classrooms #4, #21, #22, #23, and #24	Non- Friable	15%-20% Chrysotile, Good	640sf	Regulated Work Area, Intact Removal
Sink mastic, white	Underside Sink Classroom #10	Non- Friable	5% Chrysotile, Good	16sf	Regulated Work Area, Intact Removal

**“FORMER” MEADOW BROOK ELEMENTARY SCHOOL
NORFOLK, VIRGINIA**

Material/ Description	Material/ Location	Friability	%, Type Asbestos and Condition	Homog. Quantity	Removal Requirement
Mastic adhesive, yellow, associated with ceramic wall tiles	Throughout the 1954 portion of the building. 1 st and 2 nd floor corridors, bathrooms, locker rooms and the auditorium.	Non-Friable	2% Chrysotile, Good	6,240sf	Demolish In Place In Accordance With NESHAPS Regulations
CMU Block Wall Filler	Throughout the 1918 portion of the building within all corridors, classrooms, stairwells and the entryway within the media center	Non-Friable	2% Chrysotile, Good	Approx. 15,640sf	Demolish In Place In Accordance With NESHAPS Regulations
Roof Shingles (Transite)	Exterior Lower Slopped Roofs (1 Northeast, 2 South Side)	Non-Friable	2% Chrysotile, Good	560sf	Regulated Work Area, Intact Removal
Parapet Wall Flashing, Top Layer	Roof “A” (refer to hazmat report, roof drawing for the roof location)	Non-Friable	10% Chrysotile, Good	365sf	Regulated Work Area, Intact Removal
Parapet Wall Flashing, Bottom Layer	Roof “A”	Non-Friable	5% Chrysotile, Good	365sf	Regulated Work Area, Intact Removal
Flashing, Bottom Layer	Roof Hatch, Roof “A”	Non-Friable	2% Chrysotile, Good	10lf	Regulated Work Area, Intact Removal
Perimeter Flashing, Bottom Layer	Roof “A” 2 nd Floor Transition	Non-Friable	10% Chrysotile, Good	206lf	Regulated Work Area, Intact Removal
Parapet Wall Flashing, Bottom Layer	Roof “B” (refer to hazmat report, roof drawing for the roof location)	Non-Friable	5% Chrysotile, Good	1,350sf	Regulated Work Area, Intact Removal
Perimeter Flashing	Exterior Entry Canopies/Overhangs, 1918 portion (9 total)	Non-Friable	15% Chrysotile, Good	70lf	Regulated Work Area, Intact Removal

"FORMER" MEADOW BROOK ELEMENTARY SCHOOL
NORFOLK, VIRGINIA

FRIABLE ASBESTOS CONTAINING MATERIAL LOCATIONS

Interior Textured Ceiling Plaster

The Friable Asbestos Containing Material was identified throughout the first and second floor areas within the 1918 portion of the building to include the Cafeteria, Corridors, classrooms, storage areas, clinic office and stairwells. Material in most instances is above acoustical ceiling tiles and was observed to be intact and in good condition. Positive textured ceiling plaster was also identified within the Media Center/Library located in the 1954 section of the building. This materials was also observed to be intact and in good condition.

Various Diameter Pipe Insulations

The Friable Asbestos Containing Materials were identified within the 1918 portion of the building above the hard plaster ceilings within the kitchen, cafeteria and are expected to be within limited wall chase areas and above the foyer/corridor area. Materials were observed to be intact and in good condition at the time of the inspection. All piping insulation below ceiling areas were reported negative for asbestos following a review of available documents and verification bulk sampling/laboratory analysis.

Materials were identified within the East wing attic area of the 1954 portion of the building. Materials were observed to be intact and in good condition at the time of the inspection. All piping insulation below ceiling areas in the 1954 portion of the building were reported negative for asbestos following a review of available documents and verification bulk sampling/laboratory analysis.

Materials were identified within concrete trenches located under the 1954 portion of the building. Access to trenches were limited to exterior openings, the trenches are not accessible from within the crawlspace. Trenches appear to be located between poured concrete slab/footings. Observed insulation contained significant damage, soil surfaces were observed to have significant visual evidence of asbestos contamination. (Note: The main central crawlspace and boiler room crawlspace appear have been abated and do not contain asbestos)

Exterior Overhangs/Canopies Textured Plaster

The Friable Asbestos Containing Material was identified on all exterior overhangs/canopy underside areas. Overhangs/Canopies are associated with the 1918 portion of the building. Material was observed to be intact and in good condition.

Exterior Wall Stucco/Wall Plaster

The Friable Asbestos Containing Material was identified on the 1918 portion of the building and is located exterior of the main foyer, the cafeteria, the kitchen, first and second floor areas of the West wing on the West, East and South sides of the wing. Material was observed to be in good condition with evidence of some delamination.

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NON-FRIABLE ASBESTOS CONTAINING MATERIAL LOCATIONS

Floor Tiles and Associated Mastic Adhesive

Non-friable Asbestos Containing Floor Tiles and Associated Mastic Adhesives were identified throughout the 1918 and 1954 portions of the building. Following a review of available documents and verification bulk sampling/laboratory analysis, some floor tiles were reported not to contain asbestos. Based on the inspection results positive asbestos flooring materials locations include the kitchen dry storage, 1st floor corridors 1, 2, 3 and 4. The 2nd floor East and West wing corridors, the three stairwells, classrooms #1, #2, #3, #4, #10, #11, #19, #22, #23, #25, #26, #27, #28, and #29. The 1st floor boy's and girl's restrooms, all large storage rooms and closets within classrooms, custodial closets, auditorium stage and the teachers lounge. Some materials are located under cabinets, book shelves and carpeted areas. Materials were observed to be intact and in good condition.

Flooring Mastic Adhesive Under Carpeted Areas and Sink Mastic

Non-friable Asbestos Containing Mastic Adhesives was identified within classroom #8 and the Library under glue applied carpeting. Sink mastic was identified associated with the underside coating of the sink within classroom #10. Materials were observed to be intact and in good condition.

Cementitious Vent Pipe

Non-friable Asbestos was identified in the Cementitious (Transite Type) vent pipe associated with the Hot Water Heater located in kitchen area. Material was observed to be in good condition at the time of the inspection.

Cementitious Chalkboards

Non-friable Asbestos was identified in the Cementitious (Transite Type) chalkboards located in classrooms #4, #21, #22, #23 and #24. Material was observed to be in good condition at the time of the inspection.

Cove Base Adhesive

Non-friable Asbestos Containing Adhesives was identified associated with cove base throughout the 1st and 2nd floor West wing of the 1918 portion of the building and within the media center/library. Materials were observed to be intact and in good condition.

Ceramic Tile Adhesive

Non-friable Asbestos Containing Adhesive was identified associated with ceramic wall tiles throughout the 1954 portion of the building. Adhesive is located behind the wall tiles which are located in the 1st and 2nd floor corridors, bathrooms, locker rooms and the auditorium. Materials were observed to be intact and in good condition.

CMU Block filler

Non-friable Asbestos Containing Block Filler associated with CMU Block Walls was identified throughout the 1918 portion of the building within all corridors, classrooms, stairwells and the entryway within the media center/library. Materials were observed to be intact and in good condition.

Exterior Cementitious Roof (Transite) Shingles

Non-friable Asbestos was identified within exterior "Transite" roof shingles located on the two Southside entryways and at the Northeast Corner of the 1954 portion of the building. Materials were observed to be intact and in good condition.

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NORFOLK, VIRGINIA

Exterior Roof Flashing

Non-friable Asbestos was identified in the roofing tar/flashing located on the nine exterior canopies/overhangs. Asbestos was also identified in the bottom layer roof flashing associated with the Parapet Wall, the Roof Hatch, Perimeter Gravel Stop and 2nd floor Wall Transition associated with Roof Area "A" (refer to roof drawing), and the Parapet Wall bottom layer flashing located on Roof Area "B". No other roofing materials were identified to contain asbestos. Materials were observed to be intact and in good condition.

1.3 WORK CONDITIONS

- A. Contractor agrees to guarantee and hold harmless Owner, Owner's agents and employees, against any and all claims arising out of the infringement or alleged infringement by Contractor, or any of Contractor's agents, employees or subcontractors, of any rights secured under copyright, trademark, or patent protection. In that regard, Contractor hereby represents, on behalf of itself, its agents, employees and/or subcontractors, that all necessary licenses for the use of any copyright, trademark or patent have been obtained, are in full force and effect at the time of execution of this contract, and shall remain in full force and effect during the term of this contract and any extension hereof.
- B. The performance and execution of the work shall be monitored by a representative and/or representatives appointed by The City of Norfolk to ensure full compliance with these specifications and all applicable regulations. The City of Norfolk will bear the cost in connection with the laboratory and inspection work required for initial final clearances and inspection in this specification; however, the cost of Contractor delays and subsequent visual inspections and laboratory analysis for personal and area samples taken because the limits specified were exceeded in the initial tests shall be borne by the contractor.
- C. The City of Norfolk and/or appointed representatives reserve the right to halt the project until hazardous or potentially hazardous conditions are corrected. It will be the responsibility of the Contractor to pay for the consultant services and costs involved to correct the non-compliance.
- D. The City of Norfolk and/or appointed representative must approve all work and work practices prior to the commencement of work activities.

1.4 CODES, PERMITS, AND STANDARDS

- A. The Contractor shall be solely responsible for compliance with all applicable federal, state, and local laws, ordinances, codes, rules, and regulations. All work installed shall comply with all applicable codes and regulations as amended. Before starting the work, the Contractor shall examine the Specifications and Design Plans for compliance with codes and regulations applicable to the work and shall immediately report any discrepancy to the Owner's Designated Representative.
 - 1. Federal and State Regulations, Codes, and Standards: Standards which govern asbestos abatement work or hauling and disposal of asbestos waste material are included in the Specification by reference. The current issue of each document shall govern. Where conflict among requirements or with these Design Plans and Specifications exists, the more

**“FORMER” MEADOW BROOK ELEMENTARY SCHOOL
NORFOLK, VIRGINIA**

stringent requirements shall apply. The Contractor shall be familiar with the following regulations governing the work:

- a. Title 29, Code of Federal Regulations, U.S. Department Of Labor, Occupational Safety and Health Administration (OSHA) Standards.
 - Part 1910.20: Access to Employee Exposure and Medical Records
 - Part 1910.134: Respiratory Protection
 - Part 1910.1200: Hazard Communication
 - Part 1926.1101: Construction Industry
 - b. Title 40, Code Of Federal Regulations, U.S. Environmental Protection Agency (EPA) Standards.
 - Part 61, Subpart A: National Emissions Standard for Hazardous Air Pollutants - General Provisions
 - Part 61, Subpart M: National Emission Standards for Hazardous Air Pollutants - National Emission Standard for Asbestos
 - Part 763: Asbestos-Containing Materials in Schools
 - c. Title 49, Code Of Federal Regulations, U.S. Department Of Transportation (DOT) Standards.
 - Part 171 - Hazardous Substances
 - Part 172, Subparts B & C - Hazardous Materials Tables and Hazardous Materials Communications Regulations
 - Part 173, Subpart M - Shippers - General Requirements for Shipments and Packaging
2. Manufacturer's Standards: The following Manufacturer's Standards shall apply, as referenced:
- a. American National Standards Institute (ANSI) Publications:
 - Z9.2-79: Fundamentals Governing the Design and Operation of Local Exhaust Systems
 - Z88.2-80: Practice for Respiratory Protection
 - Z86.1-1973: Commodity Specification for Air.
 - b. Underwriters Laboratories Inc. (UL) Publication.
 - 586-77: Test Performance of High Efficiency Particulate Air Filter Units
 - 586-85: Standard for High-Efficiency Particulate Air Filter Units
 - 467: Grounding and Bonding Equipment
 - c. American Society For Testing And Materials (ASTM) Publication:
 - D1331-56: Surface and Interfacial Tension of Solutions of Surface-Active Agents

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NORFOLK, VIRGINIA**

d. National Fire Protection Association (NFPA) Publication.

- 70-1988: National Electrical Code (NEC)

1.5 PERMITS, STATE LICENSES, AND NOTIFICATIONS

The Contractor shall be responsible for obtaining necessary permits, state licenses, and certifications of personnel in conjunction with asbestos removal, hauling, and disposition and shall provide timely notification of such actions as may be required by federal, state, regional, and local authorities. Fees and/or charges for these licenses and permits shall be paid by the Contractor.

- A. Contractor shall be required to submit an asbestos notification as necessary. Written notification shall be made in accordance with EPA Standard Title 40 CFR, Part 61, Subpart M to: DEPARTMENT OF LABOR AND INDUSTRY, ATTN.: ASBESTOS CONTROL CLERK, POWERS-TAYLOR BUILDING, 13 NORTH 13TH STREET, RICHMOND, VIRGINIA 23219; FAX NO.: (804) 371-7634. Provide written notice to applicable agencies if the start date stated on the notification form changes.
- B. Upon completion of the asbestos removal/demolition construction, submit notification of project completion to the Administrator, and to other agencies requiring notification under Paragraph 1.2.3.1.

1.6 TERMINOLOGY

The following commonly-used terms are defined in the context of these Design Plans and Specifications:

- A. Abatement: Procedures to control or decrease fiber release from asbestos-containing building materials or insulation material containing asbestos. Includes removal, enclosure, and encapsulation.
- B. Asbestos-Containing Material (ACM): Any material or product which contains more than 1 percent asbestos.
- C. Aggressive Sampling: Air monitoring samples collected while a leaf blower, fans, or other such devices are used to generate air turbulence within the work area.
- D. Air Filtration Device (AFD): A portable local exhaust system equipped with HEPA filtration, capable of maintaining a constant low velocity air flow into contaminated areas from adjacent, uncontaminated areas and capable of maintaining a negative air pressure with respect to the adjacent, uncontaminated areas.
- E. Air Lock: A system for permitting ingress or egress to the work area while permitting minimal air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways placed a minimum of three feet apart.
- F. Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time. Personal air sampling results shall be calculated to reflect the employee's

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NORFOLK, VIRGINIA**

eight-hour time weighted average (TWA) exposure. Area sampling results are reported directly, without calculating the TWA.

- G. Amended Water: Water to which a surfactant has been added.
- H. Asbestos Removal Encapsulant: A chemical solution used in place of amended water during asbestos removal to penetrate, bind, and encapsulate the asbestos-containing material.
- I. Authorized Visitor: Owner's Designated Representative, or representatives of any regulatory or other agency having jurisdiction over the project.
- J. Competent Person: Definition and responsibilities as set down in 29 CFR 1926.1101 and as outlined herein.
- K. Curtained Doorway: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.
- L. Decontamination Enclosure System: A series of connected rooms for the decontamination of workers (a Personnel Decontamination Enclosure System) or of materials and equipment (Equipment Decontamination Enclosure System).
- M. Designated Representative: The Owner's agent who is authorized to exercise general contract administration and industrial hygiene inspection of the work under the direction of the Owner.
- N. Differential Air Pressure Recording Device: A device capable of producing a continual strip record, in increments of 0.001 inches of water, of the pressure differential between the containment area (work area) and the ambient air pressure.
- O. Equipment Decontamination Enclosure System: A decontamination system for waste materials and equipment, typically consisting of a designated area of the work area, a washroom, and a holding area, with an air lock between any two adjacent rooms and a curtained doorway between the holding area and the non-work area. Not to be used for personnel entry/exit.
- P. Encapsulant (Sealant): A liquid material which can be applied to ACM and which controls the possible release of asbestos fibers from the material.
- Q. Enclosure: Procedures necessary to completely enclose ACM behind air-tight, impermeable, permanent barriers.
- R. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area.
- S. Friable: Any material which, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure.
- T. Full Face-piece High Efficiency Respirator (FFHER): A respirator which covers the wearer's entire face from the hairline to below the chin and which is equipped with a HEPA filter.

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- U. Half Mask High Efficiency Respirator (HMER): A respirator which covers one-half of the wearer's face, from the bridge of the nose to below the chin, and is equipped with HEPA filters.
- V. HEPA Filter: A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97 percent of the fibers of 0.3 micrometer or larger in diameter.
- W. HEPA Vacuum Equipment: High efficiency particulate air (HEPA) filtered vacuuming equipment having a UL 586 filter system capable of collecting and retaining asbestos fibers.
- X. Lock-down: Procedure of applying an encapsulant as a protective coating or sealant to a surface from which ACM has been removed in order to control and minimize airborne asbestos fiber generation that might result from residual asbestos-containing debris.
- Y. Monitor Representative: Owner's Third Party Monitor who is authorized to perform industrial hygiene inspection of the work.
- Z. Movable Object: A unit of equipment or furniture that can be removed from the work area.
- AA. Plasticize: To cover floors and walls with plastic sheeting as herein specified.
- BB. Personnel Decontamination Enclosure System: A decontamination system for personnel and limited equipment, typically consisting of an equipment room, shower room, and clean room, with an air lock between any two adjacent rooms, and a curtained doorway between the equipment room and the work area, and a curtained doorway between the clean room and the non-work area. The decontamination system serves as the only entrance/exit for the work area.
- CC. Powered Air Purifying Respirator (PAPR): Either a full face-piece, helmet, or hooded respirator that powers breathing air to the wearer after the air has been purified through a HEPA filter.
- DD. Removal: The act of removing and transporting asbestos-containing or asbestos-contaminated materials from the work area to a suitable disposal site.
- EE. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
- FF. Third Party Monitor: Owner's agent who is authorized to perform industrial hygiene inspection of the work. In this specification the Third Party Monitor shall be referred to as the Owner's Monitor Representative.
- GG. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with amended water or asbestos removal encapsulant and by afterwards disposing of these cleaning tools as asbestos-contaminated waste.
- HH. Work Area: Designated rooms, spaces, or areas of the project where asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area has been sealed, plasticized, and equipped with a decontamination enclosure system. A non-contained work area is an isolated or controlled-access area which has not been plasticized.

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1.7 PERSONNEL QUALIFICATIONS AND REQUIREMENTS

- A. Experience and Training: The Contractor's job supervisors, foremen, and workers shall be adequately trained and knowledgeable in the field of asbestos abatement. All phases of the work shall be executed by skilled craftsmen experienced in each respective trade. Proof of such experience shall be submitted upon request by the Owner. Improperly trained, untrained, or inexperienced personnel shall not be allowed in the work area(s). Personnel shall meet minimum training and experience requirements outlined in this Section.
1. The Contractor's on-site job supervisor shall have successfully completed, within the last twelve months, the EPA-approved course "Supervision of Asbestos Abatement Projects", and shall be qualified as an EPA-certified Contractor/Supervisor. Course must be provided by an EPA-approved training provider.
 2. The job supervisors and foremen shall be thoroughly familiar with and experienced in asbestos removal and related work and shall meet the requirements of a competent person set down in OSHA Standard 29 CFR 1926.1101.
 3. All asbestos abatement workers shall be knowledgeable, qualified, and trained in the removal, handling, and disposal of asbestos material and in subsequent cleaning of the affected environment. All asbestos abatement workers shall be certified as having attended and satisfactorily completed asbestos worker training in accordance with OSHA Standard 29 CFR 1926.1101. Course must be provided by an EPA-approved training provider.
 4. The Contractor's job supervisors, foremen, and asbestos abatement workers shall be certified and licensed as required by the Commonwealth of Virginia.
 5. Before commencement of work, all personnel who are to enter the work area shall be instructed in and shall be knowledgeable of the appropriate procedures for personnel protection and asbestos abatement. On-site training in the use of equipment and facilities unique to this job site shall be performed. Emergency evacuation procedures from the work area shall also be included in worker training.
- B. Supervision Requirements: The Contractor shall provide adequate job supervision for all phases of the asbestos abatement work.
1. The Contractor shall have a designated job supervisor present on site whenever work described in this Section is in progress. If the job supervisor leaves the site for any reason a temporary job superintendent, who meets the requirements of this Section and is familiar with the current status of the work, shall be designated. The Owner's Designated Representative shall be informed of the substitution.
 2. The Contractor shall furnish one or more foremen who are familiar and experienced with asbestos removal and its related work, safety procedures, and equipment.
 3. The job supervisor and/or one or more foremen shall be required to be continually inside each work area whenever work (preparation, removal, or cleaning) is in progress.
- C. Worker Medical Examinations: The Contractor shall provide medical examinations for all employees engaged in asbestos removal and disposal operations, in accordance with OSHA Standards 29 CFR 1910.134(b), 1926.1101, and applicable state regulations. The Contractor shall ensure that all employee examination results are on file in his office and available for review and are maintained in accordance with OSHA Standard 29 CFR 1926.1101.

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1.8 SUBMITTALS

Unless noted otherwise, the Contractor shall conform to submittal requirements listed in this section and other sections of the Contract Specifications.

- A. Pre-Project Submittal Information:** Submit the following information: **(submit 3 complete copies for review)**
1. Proof of written notifications required by Paragraph "Permits, State Licenses and Notifications" of this Section. Proof that all required permits have been obtained.
 2. Proof of written notification to the local police department and fire department that asbestos abatement work is being conducted. As a minimum, the notification letter shall include the address of the Facility, dates work is to be performed, and Design Plans indicating the areas to undergo abatement.
 3. Documentation of compliance with all requirements of paragraph "Requirements and Qualifications" of this Section. Submittals shall include:
 - a. Proof of work experience and successful completion of required EPA-certified training courses for the Contractor's job supervisors, foremen, and workers.
 - b. Proof that the job supervisors, foremen, and asbestos abatement workers meet State certification and license requirements.
 - c. Provide the name of the designated job supervisor(s) and foremen.
 - d. Proof of a current medical surveillance program for all Contractors' personnel to work on this project.
 4. Proof of a respiratory protection program. Submit level of respiratory protection intended for each operation required by the project.
 5. Proof of historic airborne fiber data. Submit airborne asbestos fiber monitoring data from an independent air monitoring firm to substantiate selection of respiratory protection proposed. Data shall include the following for each procedure required by the work: 1. date of measurement; 2. type of work task monitored; 3. methods used for sample collection and analysis, and; 4. number, duration and results of samples taken. If no Negative Exposure Assessment is submitted, work must begin in maximum respiratory requirements as determined by all Federal, state and local regulations.
 6. Proof that a landfill site has been located and arrangements for transport and disposal of asbestos-containing or asbestos-contaminated materials have been made. Provide the name and location of the landfill, and waste transport company, if applicable.
 7. Manufacturer's literature on all proposed job related equipment and products to be used on this project. Include Material Safety Data Sheets (MSDS) for encapsulants, mastic removal products, fire retardant plastics, and other chemicals to be used on this project.
 8. Certification from the encapsulant manufacturer that the encapsulant to be used is compatible with finish materials and with the operating temperatures of the systems to be encapsulated.
 9. A detailed Asbestos Removal and Disposal Work Plan which describes all aspects of the work to be performed for this project. The Plan shall include the following:
 - a. Physical description of work area (i.e., state, city, facility name, building or area designation).
 - b. Description of the asbestos scheduled for abatement (i.e., location, dimensions, quantities, etc.).

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- c. Step-by-step description of the method(s) which will be used to remove the ACM's (i.e., glove bag, modified glove bag, negative pressure enclosure, etc.).
 - d. A site plan which indicates the following: 1) locations of utility tie-ins; 2) location of waste staging and storage areas; 3) locations for placement of temporary office and material storage trailers, and; 4) worker lunchroom and temporary toilet locations.
 - e. A detailed description of the work area enclosure. Provide shop drawings (with dimensions and locations) of proposed decontamination facilities and work areas. These drawings shall indicate the following: 1) areas to be sealed off and work area boundaries; 2) proposed layout and location of the decontamination enclosure systems, and; 3) proposed location(s) of the AFD(s) and pressure differential recorder. Include a detailed description of any modifications or changes to be made to the specified negative pressure work area enclosure.
 - f. Specimen of the daily log proposed for use. Minimally, the log should include the date(s) and time(s) when all personnel enter and leave the work area(s).
- B. Owner at the time specified. Untimely submittal of information may be cause for halting work.
- 1. A request for services shall be submitted at least 24 hours in advance of required air monitoring tests and inspections to be performed by the Owner's Monitor Representative.
 - 2. Results of all air monitoring performed by the Contractor shall be posted within 24 hours after collection for all workers to see. A copy of the results shall be given to the Owner's Designated Representative at the same time.
 - 3. A certified, signed, and completed copy of each waste shipment record forms used, and receipts from the landfill operator which acknowledge the Contractor's delivery(s) of material, shall be submitted within three days following removal of ACM from building.
 - 4. Differential Air Pressure Readings: Results of the strip chart record of the work area pressure within 24 hours after the recording was made for all areas where abatement is performed under negative pressure.
- C. Post-Project Submittals: The Contractor shall provide the following information.
- 1. Notarized copies of a daily log showing the date(s) and time(s) of entrance to and exit from the work area(s) for all persons.
 - 2. Compilation in chronological order of all air monitoring records pertaining to this project.
 - 3. Compilation of all waste shipment record forms, bills of lading, or disposal receipts pertaining to this project.
 - 4. Copies of notifications to applicable agencies (see Subparagraph "Pre-Project Submittal Information" of this Section) that the asbestos abatement project has been completed.
 - 5. Certification that mechanical and electrical systems disturbed by the Contractor during work under contract have been reinstalled and are in proper working order.

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1.9 TESTING REQUIREMENTS AND RESPONSIBILITIES

Air monitoring will be performed before, during, and after asbestos abatement to document airborne asbestos fiber concentrations. In general, the Owner will be responsible for ambient air monitoring inside and outside the work area and for performing clearance testing. The Contractor shall be responsible for personal air monitoring for his employees to determine employee exposure and the level of respiratory protection required. The following paragraphs identify specific responsibilities.

A. Owner's Responsibilities:

1. The Owner will employ an industrial hygiene (IH) testing laboratory (Owner's Monitor Representative) for air monitoring and clearance testing.
2. Area air samples will be collected and analyzed using NIOSH Method 7400. Air samples will be collected during each shift from the work area, at the AFD exhaust, at the decontamination enclosure clean room, and in adjacent non-work areas.
3. In accordance with applicable regulations, clearance testing by Phase Contrast Microscopy (initial and final, where applicable) will be performed. Air samples will be collected to demonstrate final re-occupancy clearance. The fiber concentration of each sample must be less than 0.01 fibers per cubic centimeter (f/cc).
4. Owner's Monitor Representative will perform inspections of the work area, as specified.

B. Contractor's Responsibilities:

1. The Contractor, at his expense, shall provide all tests required by specified applicable regulations, codes, and standards and any other tests for his use. The use of a testing laboratory by the Owner does not release the Contractor from providing tests required for the protection and safety of his employees.
2. The Contractor shall employ an independent IH testing laboratory for analysis of personal air monitoring samples. The laboratory used for air sample analysis shall be successfully participating in the "Proficiency Analytical Testing (PAT) Program for Laboratory Quality Control for Asbestos."
3. From each work area the Contractor, at his expense, shall collect and analyze personal air monitoring samples. Sampling shall be repeated during each different work activity. Sample collection and analysis shall be performed using the OSHA Reference Method as outlined in 29 CFR 1926.1101. Results of Contractor testing shall be posted for review by workers prior to the start of the next days work, and shall be provided to the Owner's Designated Representative within 24 hours after completion of the tests.
4. The Contractor shall be advised whenever questions arise concerning compliance with standards of quality and completeness of the work, and shall use his best efforts to resolve any such questions to the satisfaction of the Owner.
5. Where clearance air monitoring tests and/or Monitoring Representative inspections are specified, the Contractor shall notify the Owner's Designated Representative at least 24 hours in advance of the required test and/or inspection.

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C. Time Requirements for Owner's Inspections and Testing

Where visual inspections or air testing is required to be performed by the Owner's Monitor Representative or Designated Representative the Contractor shall allow for the following response/analytical time for completion of the inspection/test.

1. Where visual inspections are required, allow 24 hours beginning from the time the Contractor's request is received by the Owner's Designated Representative, for the performance of the inspection.
2. Where PCM clearance air monitoring tests are required, allow 24 hours beginning from the time the Contractor's request is received by the Owner's Designated Representative, to the beginning of the air test. Allow an additional six (6) hours after beginning the test for sample collection and analysis.
3. Where TEM clearance air monitoring tests are required, allow 24 hours beginning from the time the Contractor's request is received by the Owner's Designated Representative, to the beginning of the air test. Allow an additional 48 hours after beginning the test for sample collection and analysis.
4. Where Polarized Light Microscopy (PLM) bulk sampling tests are required, allow 24 hours beginning from the time the Contractor's request is received by the Owner's Designated Representative, to the beginning of the bulk sampling. Allow an additional 48 hours after beginning the test for sample collection and analysis.

PART 2 - PRODUCTS

2.1 MATERIALS

Materials furnished under this section shall be standard products of manufacturers regularly engaged in the production of the items and shall conform to OSHA Standard 29 CFR 1926.1101; EPA Standard 40 CFR 61, Subpart M; Department of Transportation Standards 49 CFR 171, 172, and 173; applicable state regulations; and requirements specified herein. Materials listed under this section "or equal" shall be provided for work under contract.

- A. Plastic: Plastic or Polyethylene Sheet provided for this project shall be of 6-mil thickness shall be provided in rolls of sizes which will minimize the frequency of joints.
- B. Plastic: Plastic or Polyethylene Sheet provided for this project shall be equal to Griffolyn T-55 flame resistant-reinforced-polyvinyl chloride film.
- C. Duct Tape: Duct tape shall be capable of sealing joints of adjacent sheets of plastic and of attaching plastic sheeting to finished surfaces without damage to existing finish and shall be capable of adhering under both dry and wet conditions, including use of amended water.
- D. Surfactant: Surfactant (Wetting Agent) shall consist of resin materials in a water base, which have been tested to ensure materials are non-toxic and non-hazardous. Surfactants shall be installed according to the manufacturer's written instructions.
- E. Lock-down Encapsulants: Encapsulants used after asbestos removal to lock-down fugitive fibers shall carry a Class "A" fire resistance rating and shall have an ASTM E-162 flame spread index of 15 or less. A tint shall be given to the encapsulant by means of the addition of

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non-toxic, nonflammable colorings before application. The encapsulant shall be installed according to the manufacturer's written instructions.

- F. **Silicone Sealant:** Silicone Sealant shall be single component, solvent curing silicone sealant with 25% elongation capacity, -65°F to 450°F service range. Sealant shall be used to seal space around pipes when constructing a permanent barrier air seal. Sealant membrane shall be not less than 1/8" and not greater than 3/8" thick. Sealant shall be applied against a backer rod, fiberglass mat, or other suitable backup material. Sealant application shall be according to the manufacturer's written instructions.
- G. **Caulking Sealant:** Caulking sealant shall be single component, non-sag elastomer with 1600% elongation capacity. Sealant shall meet the requirements of Federal Specification TT-S-00230C, Class A Type II. Sealant shall be used to form an airtight seal around plywood barriers or temporary partitions, to seal along the seams of the decontamination enclosure system's plywood sheathing, and to seal around piping or other small penetrations of the work area. Sealant application shall be according to the manufacturer's written instructions.
- H. **Insulation Cement:** Insulation Cement shall be ASTM C 195 (100°F to 1,600°F), mineral fiber, with a thermal conductivity 0.85 maximum at 200°F mean when tested per ASTM C 177.
- I. **Foam Sealant:** Foam Sealant shall be expanding urethane Class 1 foam sealant with a Underwriters Laboratories, Inc. (U.L. 723) flame spread index of 25 or less, smoke developed index of 0, and a minimum operating temperature range between -100°F and 250°F.
- J. **Plywood:** Plywood used for temporary partitions, decontamination enclosure systems, and tunnels shall be an exterior grade and a minimum 3/8-inch thick.
- K. **Spray Adhesive:** Spray Aerosol Adhesive shall be specially formulated to stick to sheet polyethylene (3M 76, 3M 77, or equivalent).
- L. **Other Materials:** All other materials, such as lumber, plywood, tools, scrapers, brushes, cleaning materials, adhesive, nails, hardware, etc., which are required to perform the work described in this Section shall be provided. Materials and equipment shall be new or used, uncontaminated by asbestos, in serviceable condition, and appropriate for the intended purpose.
- M. **Disposal Bags:** Plastic Disposal Bags shall be a minimum of six mils in thickness. Bags shall be labeled in accordance with this Section.
- N. **Shipping Containers:** Impermeable Containers shall be suitable to receive and retain any asbestos-containing or asbestos-contaminated materials until they are disposed of at an approved landfill. The containers shall be labeled in accordance with this Section. Containers shall be both airtight and watertight and conform to DOT Standard 49 CFR 178.224. Each container shall be constructed of fiber, hard plastic, or metal, with locking, airtight lids.
- O. **Labels:** Disposal bags and shipping containers shall bear danger labels, transportation packaging labels, and generator identification information. Labels shall be permanently

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affixed to all bags and shipping containers containing ACM, in accordance with OSHA Standard 29 CFR 1926.1101, DOT Standard 49 CFR Part 171 and 172, and EPA Standard 40 CFR Part 61.150(a)(1)(v).

1. Danger label format and color shall conform to OSHA Standard 29 CFR 1926.200. Danger labels shall display the following legend/information:

**DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG
DISEASE HAZARD**

2. DOT label format and color shall conform to DOT Standard 49 CFR 172.407. DOT labels shall display the following legend/information:

**RQ ASBESTOS
CLASS 9
NA 2212, III**

3. Generator identification information shall be affixed to each DOT label format and color shall conform to DOT Standard 49 CFR 172.304. Generator identification information labels shall display the following legend/information:

GENERATOR'S NAME: _____
GENERATOR'S 24 HOUR PHONE: _____
GENERATOR'S FACILITY ADDRESS: _____

- P. Reuse of Containers: If impermeable containers used to transport bagged asbestos waste to the landfill are to be reused, the empty containers shall display the following label:

**RESIDUE:
LAST CONTAINED ASBESTOS RQ**

- Q. Warning Signs: Warning Signs shall be posted at the perimeter of the work area prior to abatement operations in accordance with OSHA Standard 29 CFR 1926.1101. Danger sign format and color shall conform to OSHA Standard 29 CFR 1926.200. The signs shall display the legend indicated below:

**DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE
CLOTHING ARE REQUIRED IN THIS AREA**

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2.2 EQUIPMENT

Equipment furnished under this section shall conform to applicable federal and state regulations, local codes, and the requirements specified herein.

- A. **Communication Equipment:** Devices suitable for inter-room communications, such as "walkie-talkies" or "radio band" communicators shall be provided.
- B. **Spraying Equipment:** Equipment used to apply amended water or removal encapsulant shall be of a low-pressure type to prevent disturbance of the asbestos prior to physical controlled removal. Airless spray equipment shall be provided for the application of asbestos encapsulant.
- C. **Air Filtration Device (AFD):** For local exhaust ventilation and work area air filtration, high efficiency particulate air (HEPA) filtration systems equipped with filtration equipment which complies with ANSI Z9.2. shall be provided. Air movement systems or air filtering equipment should not discharge unfiltered air outside the work area. A sufficient quantity of AFD's shall be used in order to provide one workplace air change every 15 minutes. To calculate the total air flow movement:

$$\text{Total Cubic Feet Per Minute (CFM)} = \frac{\text{Volume of work area in cubic feet}}{15 \text{ minutes}}$$

To calculate the number of units needed for the abatement:

$$\text{Number units needed} = \frac{\text{Total cubic feet per minute (CFM)}}{\text{Capacity of air filtration devices in CFM}}$$

Work area exhaust must be sufficient to maintain the required negative pressure (vacuum) in the work area, with respect to the adjacent surrounding non-work areas. Provisions shall be made to change filters without releasing captured asbestos fibers to the surroundings.

- D. **Differential Air Pressure Recording Device:** A continual strip record of the pressure differential between the work area and the adjacent non-work areas shall be provided. Strip chart shall show the time on the horizontal axis and work area vacuum on the vertical axis.
 - E. **Vehicles:** Trucks or Vans used for the transportation of asbestos waste shall be enclosed and suitable for loading, temporary storage, transit, and unloading of asbestos-contaminated waste without exposure to persons or property.
 - F. **Electrical Service:** Compliance with applicable standards of the National Electric Code (NEC); Underwriter's Laboratories (UL); OSHA; local building codes; and regulations governing equipment, materials, layout, and installation of temporary electric service shall be ensured by the Contractor.
- 1. **Lighting:** Temporary lighting within the work area and decontamination systems shall be provided. Minimum illumination level in the work area shall be ten foot-candles.

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Minimum illumination level in pedestrian tunnels, stairways, ladder runs, and decontamination enclosure systems shall be 20 foot-candles.

2. Ground Fault Interrupters: The Contractor shall provide and use ground fault circuit interrupters on all electric power service used in the work area and in decontamination enclosure systems.

- G. Fire Extinguishers: Type "ABC" dry chemical extinguishers or a combination of several extinguishers of NFPA recommended types for the fire hazard exposures in each extinguisher location shall be provided. Minimum size of extinguisher shall be 4-A, and 40-B:C. Supply a minimum of one extinguisher for every 1,000 square feet of floor area, with a maximum travel distance to an extinguisher of 75-feet. Supply at least one extinguisher in each decontamination enclosure equipment room, and clean room.
- H. Smoke Detectors: Smoke detectors of the battery powered ionization type will be required at a rate of one per 5,000 square feet, with a minimum of one smoke detector in the decontamination enclosure clean room, and one in the work area.
- I. Water Filtration System: A system capable of filtering and retaining particles larger than 5.0 microns in size shall be provided.

2.3 WORKER PROTECTIVE CLOTHING AND EQUIPMENT

Protective clothing and equipment shall conform to OSHA Standard 29 CFR 1926.1101

- A. Protective Clothing: Workers shall be provided with sufficient sets of properly fitting, full-body, disposable coveralls, head covers, gloves, and 18-inch high boot-type foot covers. Disposable coveralls, head covers, and 18-inch high boot-type foot covers shall be constructed of material equal to DuPont "TYVEK-Type 14" or Kimberly-Clark "Kleenguard", as a minimum requirement.
 1. The Contractor shall provide authorized visitors and the Owner's Monitor Representative suitable properly fitting protective disposable clothing, headgear, hard hats, eye protection, and footwear (up to four sets per 8-hour shift) whenever they are required to enter the work area.
- B. Equipment: Eye protection and hard hats required for job conditions or by applicable safety regulations shall be provided.
- C. Respiratory Protection: The Contractor shall be solely responsible for providing adequate respiratory protection at all times for all individuals in the work area. Types of respirators used shall be approved by MSHA/NIOSH for asbestos in accordance with OSHA Standard 29 CFR 1926.1101. The Contractor shall provide a level of respiratory protection that supplies an airborne fiber level inside the respirator below 0.01 fibers per cubic centimeter (f/cc), as the minimum level of protection allowed. Determine the proper level of protection by dividing the actual airborne fiber count in the work area by the "protection factors" given below for each respirator type:

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Respirator Type	Protection Factor
Air purifying: negative-pressure respirator, high efficiency HEPA filter, half-face-piece	10
Air purifying: negative-pressure respirator, high efficiency HEPA filter, full-face-piece	50
Powered air purifying (PAPR): positive pressure respirator, high efficiency HEPA filter, full-face-piece	100
Type C supplied air: continuous flow full-face-piece with HEPA escape	100
Type C supplied air: positive-pressure respirator, pressure-demand, full-face-piece HEPA escape	1000
Type C supplied air: pressure-demand, full-face-piece, equipped with an auxiliary SCBA	Over 1000

1. The Contractor shall provide workers with individually issued and marked respiratory equipment. Respiratory equipment shall be suitable for the asbestos exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1926.1101, and as more stringently specified otherwise, herein.
2. Where respirators with disposable filter parts are employed, the Contractor will provide sufficient filter parts for replacement as necessary or as required by the applicable regulation.

2.4 DECONTAMINATION ENCLOSURE SYSTEMS

The Contractor shall provide a personnel decontamination enclosure system, and an equipment decontamination enclosure system in accordance with OSHA Standard 29 CFR 1926.1101, and as specified herein.

- A. **Structure:** Use modular systems or build using wood or metal frame studs, joists, and rafters placed at a maximum of 24 inches on-center. Interior shall be sheathed with plywood caulked or taped airtight at joints and seams. Interior and exterior shall be lined with two layers of 6-mil plastic sheeting, with a minimum overlap of 16 inches at seams and sealed (airtight) by tape and adhesive. If decontamination enclosure system is constructed outside of building, provide plywood on exterior and make structure weatherproof. The structure shall be capable of withstanding a minimum lateral wind load of 50 psf. The roof of the structure shall be capable of supporting a minimum live load of 100 psf. Compliance with local building codes and other regulations governing temporary structures shall be ensured by the Contractor.
- B. **Curtained Doorways:** Two overlapping sheets of 6-mil polyethylene shall be placed over a framed doorway and secured along the top of the doorway. Secure the vertical edge of the outer sheet along one vertical side of the doorway and the vertical edge of the second sheet along the opposite vertical side of the doorway. The sheets shall be weighted so that they close quickly after being released.
- C. **Air Locks:** Air locks shall consist of two curtained doorways placed a minimum of three feet apart.
- D. **Personnel Decontamination Enclosure System:** This system shall be the only entrance/exit for the work area. The decontamination enclosure system shall be placed adjacent to the work area and shall consist of three totally enclosed chambers and a gross clean-up system as follows:

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1. **Workers' Gross Clean-up System:** Just inside the work area and immediately adjacent to the equipment room, a workers' gross clean-up system will be used for removal of dust, debris, or loose material from protective clothing and footwear. This area is to be separated from the equipment room by a curtained doorway. A "hand-held" water device or shower shall be provided to facilitate the gross removal of loose material.
 2. **Equipment Room:** The equipment room shall have a curtained doorway to separate it from the work area (the workers' gross clean-up area), and share a common air lock with the shower room. The equipment room shall be large enough to accommodate at least one worker (allowing him enough room to remove his protective clothing and footwear), a 6-mil disposal bag in an impermeable container, and any other equipment which the Contractor wishes to store when not in use.
 3. **Shower Room:** The shower room shall have two common air locks: one which separates it from the equipment room and one which separates it from the clean room. The shower room shall contain at least one shower with hot and cold water per eight workers. Careful attention shall be given to the shower to ensure against leaking of any kind. The Contractor shall supply shampoo and soap in the shower room at all times. Contractor shall be responsible for needed water and electrical and the cost associated.
 4. **Clean Room:** The clean room shall share a common air lock with the shower room and shall have a curtained doorway to separate it from outside non-contaminated areas. The clean room shall be sized to adequately accommodate the work crew. Benches for seating, lockable lockers for storage of workers' street clothing, shelves for storing respirators, and a location for posting shall be provided in this area. Clean disposable clothing, replacement filters for respirators, clean dry towels, and other necessary items shall also be provided in the clean room. A hinged, lockable door shall be placed at the entrance into the clean room to prevent unauthorized access into the work area. The clean room shall not be used for storage of tools, equipment, or materials or as office space.
- E. **Equipment Decontamination Enclosure System:** This system is located adjacent to the work area. The equipment decontamination enclosure system, consisting of two totally enclosed spaces, shall be constructed as follows:
1. **Equipment Washroom:** An equipment washroom shall have two air locks: one adjacent to the work area and one common air lock which separates it from the holding area. The washroom shall have facilities for washing material containers and equipment. Gross removal of dust and debris from contaminated material containers and equipment shall be accomplished in the work area, prior to moving to the washroom.
 2. **Holding Area:** A holding area shall share a common air lock with the equipment washroom and shall have a curtained doorway to outside areas. A hinged, lockable door shall be placed at the holding area entrance to prevent unauthorized access into the work area.
- F. **Utilities:** Lighting, heat, and electricity shall be provided as necessary by the Contractor. Contractor shall be responsible for all cost, permits and equipment needed for temporary utilities.

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PART 3 - EXECUTION

3.1 PERSONNEL PROTECTION AND DECONTAMINATION PROCEDURES

- A. General: The Contractor shall take all safety measures and precautions necessary to protect his employees and building occupants in accordance with OSHA Standard 29 CFR 1926, EPA Standard 40 CFR, Part 61, Subpart M, and applicable state regulations. The Contractor shall be solely responsible for enforcing personnel protection requirements. Table 3.1 summarizes the minimum levels of personnel protection required during work of this Section.
1. Workers shall be fully protected with respirators and protective clothing from the time of first disturbance of asbestos-containing or asbestos-contaminated materials prior to commencing actual asbestos abatement until final cleanup is completed.
 2. Workers or authorized visitors shall not eat, smoke, drink, or chew gum or other substances while in the work area(s) or decontamination area(s).
 3. Contaminated worker footwear, eye protection, and hard hats shall be stored in the equipment room when not in use in the work area and, upon completion of asbestos abatement, disposed of as asbestos-contaminated waste or decontaminated for reuse.
 4. Except for government inspectors with jurisdiction, no visitors except those authorized by the Owner shall be allowed in work area.
- B. Worker Respiratory Protection: With approval from the Owner's Designated Representative, historical airborne fiber level data may serve as the basis for selection of the level of respiratory protection to be used for the time interval prior to the Contractor establishing the eight-hour time weighted average (TWA) for an abatement task. Historical data provided by the Contractor shall be based on personal air monitoring of the "breathing zone" of his employees for other asbestos abatement projects, and the data were obtained during work operations conducted under workplace conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor's current operations. Documentation of aforementioned results shall be presented to the Owner's Designated Representative for review of applicability. This will not relieve the Contractor in providing personal air monitoring to determine the TWA for the work under contract. The TWA shall be determined in accordance with 29 CFR 1926.1101. After the TWA is established, the Contractor may furnish respirators as presented in the Specifications.

**TABLE 3.1
MINIMUM PERSONAL PROTECTION REQUIREMENTS**

Activity	Respiratory Protection	Disposable Clothing	Post-Work Shower	Decon. Unit
Removal of "loose items" prior to work - no potential asbestos exposure	None	NO	NO	NO
Removal of "loose items" prior to work - potential asbestos exposure	HMHER	YES	YES	YES
Precleaning prior to abatement	HMHER	YES	NO	NO
Sealing openings prior to abatement - no potential asbestos exposure	None	NO	NO	NO
Plasticizing prior to abatement - potential asbestos exposure	None	NO	NO	NO
Gross removal	PAPR	YES	YES	YES
Glove bag and wrap and cut removal	PAPR	YES	YES	YES
Transite board removal	PAPR	YES	YES	YES
Preliminary cleanup (after gross removal)	PAPR	YES	YES	YES
Plastic removal after initial clearance	FFHER	YES	YES	YES
Lockdown	PAPR	YES	YES	YES

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Cleaning and plastic removal after lockdown before final clearance	FFHER	YES	YES	YES
Activities after final clearance	NONE	NO	NO	NO
Loading ACM on truck (outside work area)	HMHER	YES	NO	NO

- These are minimum requirements only. The Contractor is fully responsible for the personal protection of all workers at the site. Where conflict or interpretational differences arise, the text of the specifications apply.
- If acceptable historical airborne fiber level data is not available for the work method in question the Contractor shall furnish workers with PAPR - full-face, powered-air purifying respirators for each different work activity until the Contractor determines the 8-hour time-weighted average (TWA). After the TWA is established, the Contractor may furnish respirators as presented in the Specifications, with the minimum requirement as indicated above.
- Requirement may be waived by the Owner's Designated Representative on an individual case by case basis. Refer to text of Specifications.

PAPR: Full face-mask powered air purifying respirator.

HMHER: Half face-mask high efficiency respirator.

FFHER: Full face-mask high efficiency respirator.

1. In lieu of historical data the Contractor shall furnish for use by his workers full-face, powered-air, negative pressure respirators for each different work activity until the Contractor determines the TWA. After the TWA is established the Contractor may furnish respirators as presented in the Specifications.
2. Review material safety data sheets (MSDS) for products to be used during the work. Follow recommendations as given by the product manufacturer for personnel protection required to be worn during product application.

C. Air Monitoring Requirements: The Contractor's shall be responsible for development and implementation of an air monitoring program in accordance with OSHA Standard 29 CFR 1926.1101, good industrial hygiene practices, and the requirements herein for gross removal and/or glove bag removal. Documentation of air sampling shall include as a minimum, calculations of minimum sample volume to achieve necessary detection limits; sampling time; sampling location (or subject); evidence of periodic inspection of sampling equipment; documentation of daily pre- and post-calibration of sampling equipment; detailed description of worker protective devices; description of any atypical environmental conditions; and a description of work practices/procedures/controls in operation during the sampling period. Documentation of sample analysis shall include, as a minimum, sample identification; total sample duration, sample flow rate; the "Limit of Reliable Quantitation"; total air volume; total fibers counted (with work sheets); total fields counted; blank filter analysis; and reticule field area. Airborne fiber concentrations in fibers per cubic centimeter (f/cc) shall be calculated and reported at the 95 percent confidence level.

1. Full-shift personal exposure air sampling of workers shall be performed to establish the 8-hour (TLV-TWA) exposure. Such sampling shall be conducted for each employee (or representative group of employees) expected to evidence the highest exposure in each work area for each type of activity on the first shift that site preparation, removal, or cleanup activities occur. Similarly, 30-minute personal exposure air sampling shall be conducted during activities anticipated to produce the highest airborne concentrations to

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determine the Excursion Limit. Personal exposure sampling shall be repeated at least every third day for areas where removal and cleanup operations are conducted for more than 1 week, or at any time that conditions indicate to the Contractor or the Contractor's CIH that the most recent personal sampling results are no longer indicative of employee exposure. PCM personal samples shall be collected and analyzed according to the OSHA Reference Method in OSHA Standard 29 CFR 1926.1101.

D. Personnel Entrance and Decontamination Procedures for Gross Removal Operations: The following entry/exit procedures shall be used for gross removal work areas.

1. All workers and authorized visitors shall enter the work area through the worker decontamination enclosure system.
2. All individuals who enter the work area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, agents, contractor(s), the project, each work area and worker respiratory protection employed. The job supervisor shall be responsible for the maintenance of the log during the abatement activity.
3. Each worker or authorized visitor shall, upon entering the job site, remove street clothes in the clean room and put on a clean respirator (with new filters, if appropriate) and clean protective clothing before entering the work area through the shower room and equipment room.
4. Each worker or authorized visitor shall, each time he leaves the work area, remove gross contamination from clothing before leaving the work area; proceed to the equipment room and remove all clothing except respirator; still wearing the respirator, proceed to the shower room; clean the outside of the respirator with soap and water while showering; remove filters and wet them and dispose of them in the container provided for that purpose; wash and rinse the inside of the respirator; and thoroughly shampoo and wash himself.
5. Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately. Disposable clothing of the type worn inside the work area is not permitted outside the work area.

3.2 PREPARATION OF WORK AREA

The following Subparagraph "General Preparations" outlines procedures applicable to all contained work areas. Work procedures specific for preparing a gross asbestos removal area and a glove bag asbestos removal area are addressed in their respective Subparagraphs. Procedures specific for preparing a non-contained work area are addressed in its respective Subparagraph.

A. General Preparations:

1. Request that the Owner's Monitor Representative perform area monitoring and establish a background count prior to the masking and sealing operations for each removal area.
2. Erect barricades; post notices and warning signs.
3. Provide and install decontamination enclosure systems in accordance with Paragraph "Decontamination Enclosure Systems" of this Section.

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4. Seal floor drains, sumps and other collection devices with 6-mil plastic and plywood, as necessary, and provide a system to collect all water used by the Contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.
 5. Ensure that the Contractor's communication equipment is in place, in operating condition, and in operation during work described in this Section.
 6. Separate by means of airtight barriers (temporary partitions) parts of the building that are not included in the work area(s) from parts of the building that will undergo asbestos abatement.
 7. Seal with temporary partitions: open doorways, cased openings, and corridors which will not be used for passage during work.
 8. Completely seal airtight and isolate the work area. All openings, including but not limited to doorways, windows, tunnels, ducts, grilles, cracks, diffusers, openings through which pipe conduit passes, and any other penetrations of the work area, shall be covered with plastic sheeting taped or caulked airtight.
 9. Maintain emergency and fire exits from the work areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with duct tape arrows or other effective designations to permit easy location from anywhere within the work area. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.
 10. Temporary lighting within the work area and decontamination system shall be provided as required to achieve minimum illumination levels specified in Paragraph "Electrical Service" of this Section.
 11. Piping systems designated for abatement work are to be shut down, cooled, and depressurized during removal work.
 12. After sealing and plasticizing the area (see Subparagraph(s) "Gross Removal Area Preparations" and "Glove Bag Removal Area Preparations") install and initiate operation of air filtration devices (see Subparagraph "Air Filtration Devices" of this Section) to provide a negative pressure of at least -0.02 inches of water within the work area relative to surrounding non-work areas. Negative pressure systems shall be operated in accordance with "Specifications and Operating Procedures for the use of Negative Pressure Systems for Asbestos Abatement," Guidance for Controlling Asbestos-Containing Materials in Buildings, EPA Document 560/5-85/024 (June 1985). Modifications or changes made to the specified negative pressure work area enclosure must be approved by the Owner's Designated Representative prior to their use (see Paragraph "Submittals").
 - a. AFD's shall be exhausted to the building exterior.
 - b. Once they are operational, do not shut down AFD's until the work area is released to the Owner following final clearance procedures.
 - c. A dedicated power supply for the AFD equipment shall be utilized.
 - d. Provide additional AFD's (minimum of 20% of capacity required in Paragraph "Air Filtration Device (AFD)" of this Section) as backup for emergency or other use.
- B. Gross Removal Area Preparations: The Contractor shall perform the following preparations in conjunction with those outlined in Subparagraph "General Preparations", for each area to undergo gross removal asbestos abatement.
1. Shut down, isolate, and lock out or tag heating, ventilating, and air conditioning (HVAC) systems which serve or which pass through the work area. Vents within the work area and seams in HVAC components shall be sealed with tape and plastic sheeting. Filters in HVAC systems shall be removed and treated as asbestos-contaminated waste.

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2. Shut down, disconnect, and lock out or tag all electric power to the work area so that there is no possibility of its reactivation until after clearance testing of the work area.
 3. Work Area Pre-cleaning Procedures: After establishing the decontamination enclosure systems, prepare and pre-clean the work area as specified below and as indicated by the drawing notes:
 - a. Movable and loose items not removed by the Owner from work areas shall be cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate and shall be removed from work areas to a temporary location designated by the Owner.
 - b. Movable and loose items as noted on the Design Plans shall be removed from the work areas and discarded as asbestos-contaminated waste.
 - c. Fixed objects within the work area shall be pre-cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate. Joints of covers or casings shall be sealed with tape and fixed objects enclosed with a minimum of two layers of 6-mil plastic sheeting sealed airtight with tape. Disassembly of these fixed objects is not required unless otherwise noted.
 - d. Existing pipe insulation which does not contain asbestos materials and is to remain shall be cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate prior to being wrapped and sealed airtight in two layers of 6-mil plastic sheeting.
 - e. Prior to being plasticized, the work areas shall be cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters, shall not be used.
 4. Plasticize the area after pre-cleaning, using the following procedure:
 - a. Cover floor with one layer of 6-mil plastic sheet, turning layer a minimum of 16 inches up wall, and seal layer to wall.
 - b. Cover walls with one layer of 6-mil plastic sheet, lapping wall layer a minimum of 16 inches, and seal layer to floor layer.
 - b. Repeat procedure for second layer. All joints in plastic sheets shall be glued and taped in such a manner as to prohibit air passage. Joints on plastic layers shall be staggered to reduce the potential for water to penetrate.
 5. Areas immediately adjacent to removal areas, such as corridors or hallways which are not in work areas but are necessary routes to and from work areas, shall be protected with two layers of 6-mil plastic sheet on floors and two layers of 6-mil plastic sheet on walls and ceilings. The Contractor is permitted to provide plastic-enclosed, framed-in tunnels in lieu of plasticizing walls and ceilings. Openings from these areas into areas where asbestos material is removed shall have curtained doorways to minimize fiber dispersal into adjacent areas.
- C. Non-Contained Work Area: In the areas indicated on the Design Plans, the construction of a sealed, contained work area is impracticable. The following preparations shall be performed when preparing a non-contained work area.
1. Request that the Owner's Monitor Representative perform area monitoring and establish a background count prior to the masking and sealing operations for each removal area.
 2. Provide a roped-off perimeter around the area where the ACM is to be removed and handled. Post notices and warning signs around the perimeter of the work area.
 3. Provide a decontamination enclosure system adjacent to the work area, in accordance with Paragraph "Decontamination Enclosure Systems" of this Section.

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4. Provide a system to collect all water used by the Contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.
5. Seal with plastic and tape from the interior all doorways, windows, vents and other openings in the exterior walls of the facility adjacent to the work.
6. Cover all horizontal surfaces within ten feet of the removal operation, including the ground, with one layer of 6-mil plastic sheet.

3.3 PRE-REMOVAL INSPECTION

Prior to removal of any ACM the Contractor shall notify the Owner's Monitor Representative and request a pre-removal inspection. Posting of warning signs, construction of temporary partitions, plasticizing of work area, building of personnel and equipment decontamination enclosure systems, and all other preparatory steps shall have been taken prior to notification of the Monitor Representative. The Contractor shall not begin asbestos removal until the Monitor Representative approves the work area preparations.

3.4 MAINTENANCE OF CONTAINED WORK AREA AND DECONTAMINATION ENCLOSURE SYSTEMS

- A. Ensure that barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon their discovery. Visually inspect enclosures at the beginning and end of each work period. Use smoke methods to test effectiveness of barriers.
- B. Thoroughly clean the decontamination enclosure systems at the end of each 8-hour work shift, and more frequently if required.

3.5 REMOVAL OF ASBESTOS-CONTAINING MATERIAL

- A General: The Contractor shall be responsible for the proper removal of ACM from the work area using standard abatement industry removal techniques. Work shall be observed by the Owner's Monitor Representative or his representative. Approval of the Contractor's abatement techniques is required by the Monitor Representative to allow for the continuance of work.

- 1 ACM shall be wetted with amended water or removal encapsulant prior to being disturbed. Keep ACM wet during removal through to the disposal of these materials (material packed in disposal containers shall be in a wet condition).

- B Gross Removal of interior and exterior textured ceiling plaster, pipe insulation, contaminated soil removal and floor tiles and associated mastic: The Contractor may use the "gross removal" procedure described below or other standard abatement industry removal technique suited to the type, shape and construction of ACM, its attachment, devices and protective coverings. Removal shall be performed within a Negative Pressure Enclosure. The Contractor shall use methods and equipment which will keep the fiber count during removal operations to less than 0.5 fibers/cc of air when tested by NIOSH Method 7400.

- 1 Gross Removal Procedure:

- a. Prepare the area as described in Subparagraph "Gross Removal Area Preparations" of this Section. Remove aluminum lagging from piping and equipment while providing a continual

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- mist of amended water or removal encapsulant to the insulation, leaving it intact. Spray asbestos materials with a fine mist of amended water or removal encapsulant, saturating materials to substrate. Spray the asbestos material repeatedly during work process to maintain a wet condition and to minimize asbestos fiber dispersion.
- b. Remove the saturated asbestos material in small sections. As it is removed, pack the material in sealable plastic bags which shall be placed in labeled drums for transport. Remove insulation materials carefully from equipment; do not permit them to fall to the floor.
- 2 After completion of all stripping work, surfaces from which ACM have been removed shall be wet brushed and sponged or cleaned by some equivalent method to remove all visible residue.
- C Glove Bag Removal of Insulation and Lagging on Fittings: The Contractor shall use the procedure as described below when using the glove bag technique for the removal of ACM from pipe fittings. The Contractor shall use methods and equipment which will keep the fiber count during removal operations to less than 0.1 fibers/cc of air when tested by NIOSH Method 7400.
- 1 Glove Bag Procedure for a Contained Work Area:
 - a. Prepare the area as described in Subparagraph "Glove Bag Removal Area Preparations" of this Section. For removal of ACM using the glove bag technique where the establishment of a sealed contained work area is impracticable, prepare work area as described in Subparagraph "Glove Bag Procedure for Non-Contained Work Area".
 - b. Place the glove bag around the section of pipe to be worked on, secure glove bag, and reinforce it. Glove bags shall provide an airtight seal around the area from which the asbestos is to be removed. Check for leakage by introducing smoke into the bag and then gently squeezing the bag with hand pressure. If any leaks occur, the bag shall be resealed and retested until no leakage occurs. This seal shall be continually maintained until all asbestos has been removed from the equipment surface enclosed within the glove bag.
 - c. If the section of pipe is covered with an aluminum jacket, this is removed first. It is important to fold in the sharp edges of the jacket to prevent cutting the bag when it is placed in the bottom. With the insulation exposed, cut the insulation inside the glove bag at each end of the section to be removed. Slit insulation from end to end and remove insulation from pipe. Throughout this process spray water on the cutting area to keep dust to a minimum.
 - d. When all insulation is removed, introduce water spray into glove bag and carry out recommended washing down procedure (tools, pipe, and upper half of bag). Scrub and wipe down the exposed pipe inside the glove bag. Apply lock-down sealant to all exposed insulation and pipe.
 - e. Remove excess air from glove bag with HEPA vacuum and remove glove bag from pipe. Continuous stripping or sliding of the glove bag shall not be allowed. Use glove bag for only one application prior to disposal. Place glove bag in a plastic disposal bag and seal bag prior to placing it in a labeled drum for transport.
 - 2 Modified Glove Bag Procedure for Non-Contained Removal Areas: Where glove bag removal is required in non-contained work areas, the following modified glove bag technique shall be used.

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- a. Prepare the area as described in Subparagraph "Non-Contained Work Area" of this Section.
 - b. Prior to attachment of the glove bag, modify the bag so as to allow make-up air to enter the bag through a port, but not leave the bag. This may be accomplished by the addition of a poly flap which is taped inside the bag over an opening cut into the bag.
 - c. Once the bag is applied to the area to undergo abatement, attach a small HEPA filtered vacuum unit to the bag to create negative pressure within the modified glove bag. The addition of a supporting frame may be required to prevent collapse of the bag.
 - d. The modified glove bag shall be installed, used, and detached as stated in Subparagraph "Glove Bag Procedure for a Contained Work Areas."
- D **Wrap and Cut of Complete Pipe Sections:** The following procedure may be used for removal of complete pipe sections. Note that all piping scheduled for demolition shall be purged prior to cutting. The Contractor shall use methods and equipment which will keep the fiber count during removal operations to less than 0.1 fibers/cc of air when tested by NIOSH Method 7400.
- 1 **Procedure:**
 - a. Prepare the area as described in Subparagraph "Glove Bag Removal Area Preparations" of this Section.
 - b. Using the glove bag removal technique described in Subparagraph "Insulation and Lagging on Pipes and Fittings", remove strips of insulation along the pipe to be demolished. Width of strip should be sufficient for the use of a torch or power cutting equipment to cut pipe while leaving remaining insulation undisturbed.
 - c. Spray aerosol adhesive on insulated pipe and wrap it airtight in one layer of 6-mil plastic sheet. Cut pipe at exposed strips. Remove pipe section from work area as asbestos waste (refer to Paragraph "ACM Waste Packaging And Load Out Procedures" for decontamination and load out procedures.
- E **Asbestos-Containing Debris:** The Contractor shall use methods and equipment which will keep the fiber count during removal operations to less than 0.1 fibers/cc of air when tested by NIOSH Method 7400.
- 1 **Procedure:**
 - a. Prepare the area as described in Subparagraph "Glove Bag Removal Area Preparations" of this Section.
 - b. Spray debris with amended water or removal encapsulant. While still wet, place loose pieces in 6-mil plastic bags and pack bags in labeled drums for transport.
 - c. If breaking is required to reduce the bulk size for disposal, wrap debris airtight in two layers of 6-mil plastic sheeting. Break while contained inside plastic layer. Pack into an additional plastic disposal bag and place in labeled drums for transport.

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- F Asbestos sealants, roofing and transite: For removal of asbestos sealants, prepare work area as described in Subparagraph "Glove Bag Removal Area Preparations" of this Section. For removal of asbestos building materials where the establishment of a contained work area is impracticable, prepare work area as described in Subparagraph "Non-Contained Work Area". The Contractor shall use methods and equipment which will keep the fiber count during removal operations to less than 0.1 fibers/cc of air when tested by NIOSH Method 7400.

1. Sealants, Roofing and Transite:

- a. The asbestos Sealants, Roofing and Transite shall be removed with intact if possible, in order to minimize emission of airborne fibers.
- b. Wrap in two layers of plastic, and seal with tape. Place in designated storage area or container. (Roofing shall be removed utilizing hand tools and placed in appropriate waste container, it is not necessary to wrap roofing in plastic).

- G Floor tile, cove base and associated adhesive: The work area shall be prepared as described in Subparagraph "Gross Removal Area Preparations" of this Section. If floor tile is the only ACM to be removed in a work area, modify area preparations to include the following: (1) only plasticize the walls to a height of three feet to protect them from water damage and (2) do not plasticize floor area. The Contractor shall use methods and equipment which will keep the fiber count during removal operations to less than 0.1 fiber/cc of air when tested by NIOSH Method 7400.

The following procedure shall be used for removal of asbestos-containing floor tile and/or mastic.

- 1 Spray with amended water floors covered with asbestos-containing tile. Wet the material sufficiently to reduce the release of fibers if the tiles are broken upon removal. Continually wet the material during the removal process to minimize fiber dispersion.
- 2 Remove floor tile using a flat hoe or scraper. Remove adhesive backing using a flat hoe, approved mastic removal solvent, or other suitable method. Do not grind or sand floor.
- 3 As material is removed, wrap it in two layers of plastic and place it in labeled containers for transport. After completion of all stripping work, scrape, wet-brush, and wipe floor. No tile or mastic residue shall remain on the floor surface following removal and cleaning.

H Additional Removal Requirements:

- 1 Stop Work Order: The Owner's Designated Representative shall issue a stop work order should the fiber count inside the work areas exceed 2.0 f/cc, and/or should the fiber count in adjacent non-work areas exceed 0.01 f/cc of air or the background count (use the greater of these two values as the reference). Work shall not resume until the condition(s) causing the increase are corrected, surfaces outside of the work area are decontaminated using HEPA vacuums or wet cleaning techniques, and the Contractor receives written notice from the Owner's Designated Representative.
- 2 Emergency Procedures: The following refers to asbestos contamination which occurs accidentally in an area prepared in accordance with Paragraph "Glove Bag Removal Area Preparations". Each project activity in the work area shall be immediately discontinued if asbestos contamination of the general work area occurs as a result of damage to or improper use of glove bags or damage to any other friable ACM located within the area. Project activities

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shall not be resumed until all surfaces in the area that are likely to have become contaminated with asbestos fibers have been thoroughly cleaned with a HEPA vacuum or by wet cleaning methods. The Contractor shall notify the Owner's Designated Representative immediately of all emergency shutdown actions. Asbestos removal work shall not resume until the Contractor receives written notice from the Owner's Designated Representative.

- 3 AFD Failure or Power Outage: On loss of negative pressure or electric power outage abatement shall stop immediately and shall not resume until power is restored and AFD ventilation equipment is operation again. When power failure or loss of AFD equipment lasts or is expected to last longer than one hour:
 - a. The make-up air inlets shall be sealed airtight, and;
 - b. The decontamination enclosure systems shall be sealed airtight after evacuation of workers and/or authorized visitors from the work area.
- 4 Removal of ACM at Walls and Slabs: Removal of ACM at penetration of walls and concrete slabs shall extend not less than six inches beyond the surface of the wall or slab. The remaining exposed end of insulation not removed shall be sealed with penetrating encapsulant. The remaining hole shall be filled with insulating cement or foam sealant as directed by the Owner's Designated Representative.
- 5 Exposed Pipe Insulation Edges: At the terminal end of asbestos removal on piping and equipment, encapsulate exposed edges of remaining asbestos insulation. Wet and cut the rough ends true and square with sharp tools and enclose the edges with a 1/4-inch-thick layer of insulating cement trowelled to a smooth, hard finish. When insulating cement is dry, lag the end with a layer of fiberglass cloth and thermal insulation adhesive overlapping the existing ends by four inches.

3.6 ACM WASTE PACKAGING AND LOAD OUT PROCEDURES

Packaging of ACM shall conform to OSHA Standard 29 CFR 1926.1101, DOT 49 CFR 171,172, and 173, EPA Standard 40 CFR Part 61, and the requirement as heretofore specified. ACM waste shall be placed in a wet condition into properly labeled disposal bags. Asbestos-contaminated materials which are likely to puncture plastic disposal bags (wire, bricks, pipe, etc.) shall be placed in hard wall shipping containers for handling and transport to disposal site. Materials to be transported through a non-work area building space shall be placed in hard wall shipping containers for handling. The specific requirements for decontamination of waste containers and load out through decontamination enclosure systems is outlined below:

- A. Decontamination of Impermeable Containers and Plastic Disposal Bags: The following procedure shall be used when removing ACM from the work area for load out through the equipment decontamination enclosure system:
 1. Place asbestos waste in disposal bags. Large items not able to fit into disposal bags shall be wrapped in one layer of 6-mil thick plastic sheeting. Clean outer covering of asbestos waste package by wet cleaning and/or HEPA vacuuming in a designated part of the work area. Move wrapped asbestos waste to the equipment washroom, wet clean each object and place it inside a second disposal bag, or a second layer of 6-mil plastic sheeting, as the item's physical characteristics demand. Air volume shall be minimized, and the bags or sheeting shall be sealed airtight.

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2. After cleaning, move asbestos-contaminated waste containers to the equipment decontamination enclosure holding area pending removal to uncontaminated areas. Ensure that containers are removed from the holding area by workers who have entered the equipment decontamination enclosure system from the uncontaminated non-work area. Dress workers moving asbestos waste in clean overalls of a color different than from that of coveralls used in the work area. Ensure that workers do not enter from uncontaminated areas into the equipment washroom or the work area. Ensure that contaminated workers do not exit the work area through the equipment decontamination enclosure system.
 3. Immediately upon completion of the waste removal for one work shift, the equipment decontamination enclosure system shall be thoroughly cleaned using wet methods and HEPA vacuum equipment.
- B. Decontamination of Impermeable Containers and Plastic Disposal Bags: The following procedure shall be used when removing ACM from the work area for load out through the personnel decontamination enclosure system:
1. Waste removal shall not occur during worker shift changes or when workers are showering or changing. Care shall be taken to prevent short circuiting and cycling of air outward through the shower and clean room. Where only one means of egress exists and the shower room is used as an equipment washroom, workers are to be stationed in each room/area of the decontamination enclosure to transfer/process the containers and equipment to or from adjacent sections. These workers are not to cross the airlock into the adjacent areas/rooms until the waste/equipment transfer is finished for that period, and the workers have gone through decontamination. The clean room workers shall have entered from uncontaminated areas with appropriate personal protective equipment; or, prior to the start of waste transfer, these workers shall have exited the work area, fully decontaminated, and subsequently donned clean personal protective equipment.
 2. Place asbestos waste in disposal bags. Large items not able to fit into disposal bags shall be wrapped in one layer of 6-mil thick plastic sheeting. Clean outer covering of asbestos waste package by wet cleaning and/or HEPA vacuuming in the work area before transferring such items into the decontamination enclosure system. Place items in the airlock which separates the shower room from the equipment room. Contaminated workers shall not enter the airlock during this procedure.
 3. Containers of ACM and the equipment shall be removed from the airlock by workers stationed in the shower room during waste removal operations. Once in the washroom, external surfaces of contaminated containers and equipment shall be cleaned a second time by wet cleaning. The cleaned containers of ACM and equipment shall be placed in uncontaminated disposal bags, or wrapped in a second layer of 6-mil plastic sheeting, as the item's physical characteristics demand. Air volume shall be minimized, and the bags or sheeting shall be sealed airtight. Place materials in hard wall containers, if required.
 4. The clean containerized items shall be moved into the airlock separating the shower room and the clean room for subsequent transfer to the clean room. The shower room workers shall not enter this airlock or the work area until waste removal is finished for that period. Containerized items and cleaned equipment shall be removed from the airlock to the clean room by workers who have entered the equipment decontamination enclosure system from the uncontaminated non-work area with appropriate personal protective equipment.
 5. The clean room shall be considered a holding area during the period of active waste transfer only for the purpose of the load out of ACM. Storage of waste in the clean room is prohibited.

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6. Immediately upon completion of the waste removal, the worker decontamination enclosure system shall be thoroughly cleaned using wet methods and HEPA vacuum equipment. Cleaning shall be completed prior to reversion to its primary function as a worker decontamination area.

3.7 CLEANUP AND CLEARANCE TESTING OF WORK AREAS

- A. Clearance Procedure for Areas Prepared As "Gross Removal" Areas: Cleaning of the work areas and other contaminated areas shall be conducted in accordance with the four-step procedure described below.

Step 1. Preliminary Cleanup and Visual inspection

Step 2. Initial Clearance and Visual inspection

Step 3. Lock-down

Step 4. Final Clearance, Visual Inspection and fiber count of <0.01 fibers per cubic centimeter (f/cc) using PCM

1. Step 1. Preliminary Cleanup:

- a. Remove visible accumulation of asbestos material and debris. Remove asbestos waste in impermeable containers from the work area.
- b. Wet clean or clean with HEPA vacuum equipment all surfaces and objects in the work area. After completion of the cleaning operation, perform a complete visual inspection of the work area to ensure that it is free of visible contamination.
- c. Upon request from the Contractor, the Owner's Monitor Representative will perform a visual inspection. If the Owner's Monitor Representative finds visible accumulations of dust in the work area, the Contractor shall repeat the wet cleaning as heretofore specified.
- d. Upon completion of Preliminary Cleanup, AFD's shall complete a minimum of 60 air exchanges before Initial Clearance Testing begins.

2. Step 2. Initial Clearance Testing:

- a. Upon request from the Contractor for Initial Clearance Testing in work area, the Owner's Monitor Representative shall test for Initial Clearance.
- b. Areas which do not comply with Initial Clearance Testing criteria shall continue to be cleaned by the Contractor until the specified standard of cleaning is achieved.
- c. When the fiber count is acceptable, one layer of plastic sheeting shall be carefully removed from ceilings, walls, and floor (if two layers are present), and shall be folded inward to trap any debris. Plastic sheeting and seals on doors, windows, vents, and other openings shall remain in place.

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3. Step 3. Lock-down:

- a. After successful completion of the Initial Clearance Procedure, all surfaces and building components from which ACM was removed (ceilings, piping, and floors) and the remaining layer of protective plastic sheeting shall receive lock-down encapsulant.
- b. When the encapsulant is dry, the layer of plastic sheeting shall be wet cleaned and/or HEPA vacuumed again.
- c. The second layer of plastic shall be removed from walls and floor and shall be folded inward to trap any debris. Do not remove seals from doors, windows, etc. or disconnect the negative pressure equipment.

4. Step 4. Final Clearance:

- a. Upon request from the Contractor, a final inspection will be performed by the Owner's Monitor Representative for the purpose of observing whether the condition of cleaned areas are free of dust, dirt, and debris. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified.
- b. When the work area passes the Monitor Representative's inspection, the Monitor Representative shall test for reoccupancy using non-aggressive sampling techniques. Samples shall be analyzed by the Interim PCM. Failure to achieve the clearance level will necessitate further cleaning as heretofore specified.
- c. When the work area passes the clearance test, disconnect AFD's and seal the intake to the machine airtight with 6-mil plastic sheeting and tape. Remove all controls and seals established.

C. Clearance Procedure for Non-Contained Work Areas: Areas in which ACM was removed in a non-contained work area, clearance shall be determined by the procedure described below.

1. Cleanup and Clearance:

- a. Remove visible accumulation of asbestos material and debris.
- b. Wet clean or HEPA vacuum all surfaces from which ACM was removed.
- c. After cleaning, perform a complete visual inspection of the work area to ensure that the work area is free of contamination. Sealed drums, bags, and all equipment used in the work area shall be removed from work area.
- d. Upon request of the Contractor, the Owner's Monitor Representative will perform a visual inspection. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified.
- e. When the work area passes the visual inspection by the Owner's Monitor Representative, all surfaces in which ACM was in contact shall receive lock-down encapsulant.
- f. When the work area passes clearance, all controls and barricades established shall be removed.

3.8 DISPOSAL AND TRANSPORTATION OF ASBESTOS-CONTAMINATED WASTE

- A. Storage of Containerized ACM: As the work progresses, remove sealed and labeled drums of ACM from the work area and place in a lockable trailer, dumpster, or other container approved for storage or transport of asbestos waste. Asbestos-containing waste shall remain under the

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positive control of the Contractor and must never be left unattended in an area or on a vehicle where unauthorized persons could gain access.

- B. Sealed and labeled disposal bags/drums shall be used to transport asbestos-contaminated waste to the landfill. Procedures for hauling and disposal shall comply with 40 CFR, Part 61, 49 CFR, Part 171 and 172, and other applicable state, regional, and local government regulations. Procedures for removal from the work area and disposal of waste are outlined below:
1. Properly completed waste shipment record forms shall accompany asbestos waste which is transported to a disposal site. This form shall be signed by each party who has control over the asbestos waste, and a copy retained by each party as responsibility for the waste is transferred to the next party. Copies of all manifest forms and waste receipts shall be provided to the Owner's Designated Representative (see Paragraph "Submittals").
 2. The Owner's Designated Representative shall be notified not less than 48 hours prior to the proposed time of removal and delivery of asbestos-contaminated waste to the landfill.
 3. Trucks hauling asbestos waste shall be totally enclosed to prevent loss or damage to waste containers en route to approved landfill. The interior of the vehicles shall be lined with two layers of 6-mil plastic.
 4. Mark with a visible warning sign during the loading and unloading of asbestos-containing waste all vehicles used to transport the waste material. Danger sign legend, text size, style and arrangement shall conform to the requirements of EPA Standard 40 CFR Part 61.149 (d)(1).
 5. Only sealed plastic bags or drums are permitted to be deposited in landfill. Damaged, broken, or leaking plastic bags shall remain in the drum, and the drum shall be deposited in landfill. Workers shall place asbestos waste in the landfill. Throwing or dumping of containers shall not be allowed. Workers unloading and handling the sealed bags/drums at the disposal site shall wear appropriate personnel protective equipment including respirators and protective clothing.
 6. After the vehicle is unloaded at the landfill, the plastic sheeting that was taped to the floor, sides and top of the truck shall be carefully removed and placed in properly labeled bags for disposal with the rest of the waste.

END OF SECTION

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APPENDICES

**“FORMER” MEADOW BROOK ELEMENTARY SCHOOL
NORFOLK, VIRGINIA**

HAZARDOUS MATERIALS INSPECTION REPORT

**APPLIED
LABORATORY
SERVICES**

**LEAD IN CONSTRUCTION
SPECIFICATION**

**DEMOLITION OF THE
FORMER MEADOWBROOKE ELEMENTARY
NORFOLK, VIRGINIA**

Prepared For:

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LEAD IN CONSTRUCTION

PART 1 GENERAL

1.1 DESCRIPTION OF THE WORK

- A. Perform all planning, administration, execution, and cleaning necessary to safely perform demolition work impacting materials that contain Lead-Based Paint or Lead-Containing Paint. Approval of or acceptance by Owner, Owner's Third Party or Architect of various construction activities or methods proposed by Contractor does not constitute an assumption of liability either by the Owner, Owner's Project Monitor, Architect for inadequacy or adverse consequences of said activities or methods.
- B. The work covered by this section includes the demolition, removal and/or disturbance of paint containing lead that is encountered during the demolition project and describes some of the resultant procedures and equipment required to protect workers and the surrounding area from contact with airborne lead dust.

1.2 WORK INCLUDED

- A. The project, "Former" Meadowbrooke Elementary School, Norfolk, Virginia is located at 7620 Shirland Avenue Norfolk, Virginia. This project consists of the in place demolition, removal and/or disturbance of painted surfaces that contain lead above the laboratory minimum detection limit for the described project. A Hazardous Materials Inspection was performed of the structure and results have been outlined within the report.
- B. Work covered by this section includes any activity that will disturb paint and materials coated with paint containing lead above the laboratory's minimum detection limit. All work must be performed in accordance with 29 CFR 1926.62. High exposure work activities include, but are not limited to, Group 1, Group 2, and Group 3 Tasks outlined below.

Group 1: manual demolition

- manual scraping and sanding
- heat-gun applications
- power tool cleaning with dust collection systems
- spray painting with lead-based paint

Group 2: lead burning

- using lead-containing mortar
- power tool cleaning without dust collection systems
- rivet blasting
- cleanup activities where dry expendable abrasives are used
- movement and removal of abrasive blasting enclosures

Group 3: abrasive blasting

- welding, cutting and burning on steel structures

- C. The Contractor is responsible for developing a project approach by coordinating the requirements of this specification with the various subcontractors performing other components of the contract in order to execute the work. The work techniques selected by the Contractor will determine the abatement measures necessary. The project approach shall be based on historical data and experience with similar scope projects. The work includes disposal of materials generated from the work. Refer to the Hazardous Materials Inspection for specific lead paint results.
- D. Include all work listed in these specifications and incidentals thereto. Require that all phases of the work be executed by skilled craftsman experienced in their respective trades. Work to be performed includes but is not limited to:

- 1. Preparation of work space as specified

2. Removal and/or disturbance of paint containing lead.
 3. Clean-up of the area as specified.
 4. Disposal of materials resulting from the work shall become the property of the Contractor and shall be disposed of in accordance with local, state, and federal regulations.
 5. Ensure that all services provided under this contract shall be performed by competent craft personnel and in a good workmanlike manner in accordance with the manufacturer's recommended procedures. Contractor's personnel shall conform with Occupational Safety and Health Administration and, Environmental Protection Agency guidelines and requirements for lead exposure in construction.
- E. Contractor may subcontract any phase or portion of the work. However, such subcontract shall not relieve Contractor from enforcing the use of all required health and safety equipment and procedures by subcontractor and its employees providing any phase of the work. Require and verify that all materials and methods used by subcontractor are consistent with materials and methods for established and safe lead work procedures and consistent with the Lead Work Plan. Existing conditions are reflected correctly to the best of Owner's knowledge. Should minor conditions be encountered which are not exactly as indicated, modification to work shall be made as required at no additional expense to Owner. Contractor is responsible for air monitoring required for the safety of its employees and area air sampling. Contractor is responsible for compliance with Lead Work Plan, selecting fabrication processes and techniques "including means, methods, and sequencing" of construction, coordinating the work with that of all other trades and performance of the work in a safe satisfactory method. The Contractor shall guarantee all work covered under this contract against defects resulting from the use of substandard materials, equipment, or workmanship.
- F. Contractor agrees to guarantee and hold harmless Owner, Owner's agents and employees, against any and all claims arising out of the infringement or alleged infringement by Contractor, or any of Contractor's agents, employees or subcontractors, of any rights secured under copyright, trademark or patent protection. In that regard, Contractor hereby represents, on behalf of itself, its agents, employees and/or subcontractors, that all necessary licenses for the use of any copyright, trademark or patent have been obtained, are in full force and effect at the time of execution of this contract, and shall remain in full force and effect during the term of this contract and any extension hereof.
- G. The performance and execution of the work may be monitored by a representative and/or representative appointed by The City of Norfolk to ensure full compliance with these specifications and all applicable regulations. The City of Norfolk will bear the cost in connection with the laboratory and inspection work required for initial final clearances and inspection in this specification: however, the cost of Contractor delays and subsequent visual inspections and laboratory analysis for personal and area samples taken because the limits specified were exceeded in the initial tests shall be borne by the Contractor.
- H. The City of Norfolk and/or appointed representatives reserve the right to halt the project until hazardous or potentially hazardous conditions are corrected. It will be the responsibility of the Contractor to pay for the consultant services and costs involved to correct the non-compliance.
- I. The City of Norfolk and/or appointed representative must approve all work and work practices prior to the commencement of work.
- 1.3 WORK NOT INCLUDED IN THE PROJECT MANUAL
- A. Area air monitoring, visual inspections, clearance inspections and clearance sampling for Owner by Owner's Project Monitor.

1.4 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred within the text by the basic designation only.

AMERICAN NATIONAL STANDARD INSTITUTE (ANSI)

ANSI Z9.2 Fundamentals Governing the Design and Operation of Local Exhaust Systems
ANSI Z88.2-80 Respiratory Protection

CODE OF FEDERAL REGULATIONS

29 CFR 1926.21	Safety Training and Education
29 CFR 1926.55	Gases, Vapors, Fumes, Dusts, and Mists
29 CFR 1926.59	Hazardous Communication
29 CFR 1926.62	Lead Exposure in Construction
29 CFR 1926.65	Hazardous Waste Operations and Emergency Response
29 CFR 1926.103	Respiratory Protection
40 CFR 260	Hazardous Waste Management Systems: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 745	Lead; Requirements for Lead-Based Paint Activities
49 CFR 172	Hazardous Materials, Tables, and Hazardous Materials Communications Regulations
49 CFR 178	Shipping Container Specification

COMMONWEALTH OF VIRGINIA (VA)

Title 54.7, Chapter 5	Virginia Lead-Based Paint Activities Regulation
VABALLC	Virginia Board for Asbestos Licensing and Lead Certification
VA DPOR	Virginia Department of Professional and Occupational Regulations
VA DEQ	Virginia Department of Environmental Quality; Divisions of Air Pollution Control and Waste Management.
9VAC-20-60	Commonwealth of Virginia Hazardous Waste Management Regulations

RESOURCE AND RECOVERY ACT (RCRA)

Hazardous Waste Characterization Toxic Characteristic Leaching Procedure (TCLP)

1.5. DEFINITIONS

- A. **Abate or Abatement:** The elimination of exposure to lead-based substances that may result in lead toxicity or poisoning, by the demolition of or encapsulation of lead-containing substances, by thorough cleanup procedures, and by post-cleanup treatment of surfaces.
- B. **Action Level:** Employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 ug/m³) calculated as an 8 hour time-weighted average (TWA).
- C. **Airborne Lead Control:** Contractor will conduct lead work operations within the lead control area in a manner which maintains airborne lead concentrations outside the control area boundary at less than 30 micrograms per cubic meter of air at all times.
- D. **Architect:** Architectural Firm or any individual employed by the firm providing architectural services for the project.

- E. **Area Sampling:** Sampling of airborne lead concentrations within the lead control area and outside the exclusion boundary which may reach the breathing zone of Contractor's employees.
- F. **Authorized Visitor:** Any federal or state representative, Owner, Architect or Engineer.
- G. **Clean Room:** An uncontaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and protective equipment. Also known as the "Change Room."
- H. **Competent Person:** One who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.
- I. **Contractor:** The Contractor is that individual, or entity under contract to Virginia Beach Public Schools to perform the herein listed work.
- J. **Contractor's Certified Industrial Hygienist (CIH):** An Industrial Hygienist employed by a professional monitoring firm who is certified by the American Board of Industrial Hygiene in Comprehensive Practice. The services of the Contractor's CIH shall be paid for by the Contractor.
- K. **Contractor's Industrial Hygienist (IH):** An Industrial Hygienist employed by a professional monitoring firm who is under the direct supervision of the CIH. The services of the Contractor's Industrial Hygienist shall be paid for by the Contractor.
- L. **Contractor's Testing Laboratory:** The Contractor's Testing Laboratory shall be retained and paid for by the Contractor to collect and analyze any required airborne lead in accordance with EPA regulations. The Contractor's Testing Laboratory must be approved by the National Lead Laboratory Accreditation Program (NLLAP).
- M. **Cleaning Solution:** Solution that contains at least one ounce of 5 percent TSP to each gallon of hot water or according to the manufacturers recommendations.
- N. **Decontamination Enclosure System:** A series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers or of materials and equipment. A worker decontamination enclosure system always contains at least five airlocks (rooms). An equipment decontamination system always contains at least three airlocks (rooms).
- O. **Eight Hour Time Weighted Average (TWA):** Airborne concentration of lead to which an employee is exposed, averaged over an 8 hour workday as indicated in 29 CFR 1926.62.
- P. **Encapsulate or Encapsulation:** To resurface or cover surfaces and to seal or caulk seams with durable material, so as to prevent and control chalking, or flaking lead-containing substances from becoming part of house dust or accessible to children.
- Q. **Enclosure:** Procedures necessary to completely enclose material containing lead-based paint behind airtight, impermeable, permanent barriers.
- R. **Environmental Consultant:** Environmental Consultant or any individual employed by the firm providing environmental consulting services for the Project.
- S. **Equipment Decontamination Enclosure System:** A decontamination enclosure system for materials and equipment, typically consisting of a washroom, an airlock, and a holding area.
- T. **Group 1 Task:** Activities performed on surfaces covered with paint that contains lead concentrations at or above the laboratory's minimum detection limit. The following trigger activities are considered Group 1

Tasks and are examples of work methods which require appropriate protective measures in accordance with 29 CFR 1926.62: manual demolition, manual scrapping, manual sanding, heat applications, general cleanup, power tool cleaning with dust collection system, and spray painting with lead-based paints.

- U. Group 2 Task: Activities performed on surfaces covered with paint that contains lead concentrations at or above the laboratory's minimum detection limit. The following trigger activities are considered Group 2 Tasks and are examples of work methods which require appropriate protective measures in accordance with 29 CFR 1926.62: lead burning, using lead-containing mortar, power tool cleaning without dust collection system, rivet blasting, cleanup activities where dry expendable abrasives are used, and movement and removal of abrasive blasting enclosures.
- V. Group 3 Task: Activities performed on surfaces covered with paint that contains lead concentrations at or above the laboratory's minimum detection limit. The following trigger activities are considered Group 3 Tasks and are examples of work methods which require appropriate protective measures in accordance with 29 CFR 1926.62: abrasive blasting, welding, cutting, and burning on steel structures.
- W. Hand Washing Facility: A temporary wash facility, that provides employees with running water, soap and towels for the purpose of hygiene practices. Hand washing facility is for the decontamination of personnel exposed to lead in accordance with 29 CFR 1926.62.
- X. HEPA or High Efficiency Particle Air: A filter capable of filtering out particles of 0.3 microns or greater from a body of air at 99.97 percent efficiency or greater.
- Y. HEPA Vacuum Equipment: Vacuuming equipment equipped with a HEPA-filtration system.
- Z. Lead Paint: Any paint containing lead greater than the laboratory minimum detection limit.
- AA. Lead Control Area: An area where lead paint operations are performed which is isolated by physical boundaries to prevent unauthorized entry of personnel thereby preventing the exposure to, or spread of lead. Physical boundaries shall be established and located such that the level of airborne lead shall not exceed 30 micrograms per cubic meter of air outside of the established boundary at any time.
- BB. Lead Permissible Exposure Limit: Employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 50 micrograms per cubic meter of air (50 ug/m^3) calculated as an 8 hour time-weighted average (TWA).
- CC. NESHAPS: National Emissions Standard for Hazardous Air Pollutants.
- DD. NIOSH: National Institute for Occupational Safety and Health.
- EE. OSHA: Occupational Safety and Health Administration.
- FF. Owner: Individual or representative employed by the Virginia Beach Public Schools / School Board.
- GG. Owner's Project Monitor: The Owner's Project Monitor shall be retained and paid for by the Owner for the duration of the lead work. The Owner's Project Monitor shall conduct area monitoring for airborne lead dust.
- HH. Personal Sampling: Sampling of airborne lead concentration within the breathing zone of an employee to determine eight hour time weight average concentration in accordance with 29 CFR 1926.62. Samples shall be considered an area within a hemisphere, forward of the shoulders with a radius of six to nine inches and centered at the nose or mouth of an employee.
- II. Physical Boundary: Area physically roped or partitioned off around lead control area to limit unauthorized entry of personnel.

- JJ. Plastic Sheetting: Plastic sheet material of specified thickness used for protection of walls, floors, etc., and used to seal openings into the work area.
- KK. Shower Room: A room constituting an airlock, between the clean room and the equipment room in the worker decontamination enclosure system, with hot and cold or warm running water suitably arranged for complete showering during decontamination.
- LL. Training: Contractor and Contractor employees will be trained in accordance with 29 CFR 1926.62 and shall be licensed by the Commonwealth of Virginia to perform lead work.
- MM. TSP: Tri-Sodium Phosphate
- NN. Wet Cleaning: The process of eliminating lead contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with cleaning solution and disposing of these cleaning tools as lead waste.

1.6 SUBMITTALS

1.6.1 Instructions

Submit “Pre Job Submittals” and “Post Job Submittals” in accordance with this section. The work may not proceed until the complete pre-job submittal package has been reviewed by the owner and/or owner’s representative. Make submittals required by this specification and the Lead Work Plan in a timely manner and at approximate times in the execution of the work to allow for sufficient and prompt review by the owner and/or owner’s representative. Review is only for general conformance with the design of the project and general compliance with the information given in this specification and the Project Manual. Revise and resubmit as necessary to establish compliance with the specified requirements. Requests for final payment will not be approved until the Post-Job Submittal package has been reviewed by the owner and/or owner’s representative. Carefully review and coordinate all aspects of each item being submitted. Verify that each item and its appropriate submittal conform in all respects with the specified requirements. Any submittal packages or any subsequent element of a submittal package that is not formally forwarded as described will be rejected as non-conforming by the owner and/or owner’s representative. All items listed in this section are applicable. If in the opinion of the Contractor, an item listed is not applicable, the Contractor must submit documentation substantiating his position. If a submittal is unavailable, the Contractor must submit documentation reconstructing the missing information as best as can be accomplished.

1.6.1.1 Identification of Submittals

Number consecutively and clearly identify all submittals. Show identification on at least the first page of each submittal, and elsewhere as necessary for positive identification of the submittal. Accompany each individual submittal with a letter of transmittal showing all information required for identification and checking. Make revisions when required and resubmit for review. Review is only for general conformance with the design of the project and general compliance with the information given in this specification and the Lead Work Plan.

1.6.1.2 Timing of Submittals

Make submittals far enough in advance of scheduled dates of commencement, execution or installation to provide time required for reviews, for securing necessary approvals, for possible revisions and re-submittals, and for placing orders and securing delivery. Accept responsibility for delays resulting from incomplete submittal packages.

1.6.2 PRE-JOB SUBMITTALS

1.6.2.1 Lead Work Plan (LWP)

Submit a detailed job-specific plan of the work procedures to be used in the removal and disturbance of lead painted building components and lead painted surfaces. Such plan shall include a sketch (or sketches) showing the location, size, and details of lead control area(s), location and details of decontamination rooms, change rooms, shower facilities, mechanical ventilation system, and requirements of TCLP testing of debris. The plan shall outline tasks which will disturb lead paint including but not limited to Group 1, Group 2, and Group 3 Tasks. The plan shall also include interface of trades involved in the work, sequencing of lead work, waste disposal plan, personal air monitoring, respirators and protective equipment to be used, and a detailed description of the method of containment of the operation to ensure that airborne lead concentrations of 30 micrograms per cubic meter of air are not exceeded. The plan will describe the protective measures to be taken to protect the Contractor's employees and the public from exposure to lead at a level greater than or equal to 30 micrograms per cubic meter of air at all times. The plan shall include cleanup procedures and final clearance sampling strategy. The plan shall incorporate the requirements of this specification and be approved by the Architect and Owner prior to the start of lead work.

1.6.2.2 Occupational and Environmental Assessment Data Report

- A. Some lead work may not require full implementation of the requirements of 29 CFR 1926.62. Based on the experience of the Contractor and/or the use of a specific process or method for performing the work, the Contractor may be able to provide historic data (previous 12 months) to demonstrate that airborne exposures are controlled below the action level. Such methods or controls shall be fully presented in the LWP. In order to reduce the full implementation of 29 CFR 1926.62, the Contractor shall provide documentation in an Assessment Data Report.
- B. Submit occupational and environmental assessment report to the owner and/or owner's representative prior to start of work, signed by the testing laboratory employee performing the analysis.
- C. Submit a report that supports the determination regarding the reduction of the need to fully implement the requirements of 29 CFR 1926.62 and supporting the LWP. The exposure assessment shall represent each job classification, or if working conditions are similar to previous jobs by the same employer, provide previously collected exposure data that can be used to estimate worker exposures per 29 CFR 1926.62. The data shall represent the worker's regular daily exposure to lead for stated work.
- D. Submit worker exposure data conducted during the task based trigger operations of 29 CFR 1926.62 with a complete process description in supporting a negative assessment.
- E. The initial assessment shall determine the requirement for further monitoring and the need to fully implement the control and protective requirements including the compliance program (LWP) per 29 CFR 1926.62.

1.6.2.3 Contractor's Testing Laboratory

Submit name, address and telephone number of the Contractor's testing laboratory. The Contractor's Testing Laboratory must be approved by the National Lead Laboratory Accreditation Program (NLLAP). This submittal must be approved by the Owner and/or Owner's Representative prior to the start of lead work.

1.6.2.4 Monitoring Results

Airborne lead samples shall be analyzed promptly and the results shall be reviewed by the Owner's Project Monitor within 48 hours of collection of each sample. The Contractor shall notify the Owner immediately of exposure to airborne lead concentrations exceeding 30 micrograms per cubic meter of air. If levels equal

or exceed 30 micrograms per cubic meter, work must be stopped immediately and corrective action taken. Written reports of all monitoring results shall be submitted to the Owner and/or Owner's Representative within one week after sample collection.

1.6.2.5 Identification Number

Generators, transporters, treaters, storers, and disposers that do not have and maintain an EPA Identification Number must obtain an identification number under the requirements of Commonwealth of Virginia Hazardous Waste Management Regulations 9VAC-20-60, as applicable. Submit the disposal contractors or subcontractors EPA Identification Number.

1.6.2.6 Insurance

Insurance certificate issued in the Owner's name by Contractor's insurance carrier listing all coverage as specified in the General Conditions.

1.6.2.7 Transportation Permits

All required permits, site location, and arrangements for transport and disposal of all waste materials. Submit notarized certification that landfill site to be used meets all Environmental Protection Agency regulatory standards. Include name of disposal subcontractor, if applicable.

1.6.2.8 Building Permits

Any building permits as required by the Commonwealth of Virginia and local government for the work required during the progress of the work.

1.6.2.9 Manufacturer's Specifications

Manufacturer's Specifications for air cleaning, vacuum equipment, and air handling equipment, as well as any special tools or safety equipment to be utilized on this Project.

1.6.2.10 Disposal Site

Identify the disposal site which is proposed for use in disposing of the debris generated on this Project. Include owner/operator, address and telephone number.

1.6.2.11 Training Employees

Train each employee performing lead work, disposal, and air sampling operations prior to the time of initial job assignment and annually thereafter, in accordance with 29 CFR 1926.21, 29 CFR 1926.62, and state and local regulations where appropriate.

1.6.2.11.1 Training Certification

Submit a license and certificate for each employee, signed and dated by the accredited training provider, stating that the employee has received the required lead training. All Contractor personnel performing work activities which will disturb lead paint shall be licensed by the Commonwealth of Virginia, Department of Professional and Occupational Regulation as lead workers or supervisors.

1.6.2.12 Medical Surveillance Program and Employee Respirator Protection Program

The Contractor is required to establish and implement these programs as required by 29 CFR 1926.62. Submit medical and respirator fit test information for all employees.

1.6.3 POST-JOB SUBMITTALS

1.6.3.1 Waste Manifests

Submit waste manifests from landfill operator within 3 working days after delivery which acknowledge the Contractor's deliveries of waste material. Receipts shall include date, quantity of material delivered, and signature of authorized representation of landfill.

1.6.3.2 Employee Listing

Submit an alphabetical listing of each employee used on the Project and the exact dates on which present on the job site.

1.6.3.3 Employee and Environmental Area Air Monitoring Results

Provide all copies of employee (for compliance with 29 CFR 1926.62) air monitoring results collected by the Contractor.

1.7 HEALTH AND SAFETY TRAINING

1.7.1 Medical Surveillance

All employees working on the project shall be on a medical surveillance program in accordance with 29 CFR 1926.62.

1.7.2 Training Course

Provide all employees working on the project with appropriate training in accordance with 29 CFR 1926.62.

1.8 OWNER'S PROJECT MONITOR

1.8.1 Payment of Testing: Owner will provide and pay Owner's Project Monitor to perform routine and special testing.

1.8.2 Duties of Owner's Project Monitor: The Owner's Project Monitor will perform on-site work site observation and documentation of work activities. The Owner's Project Monitor will collect environmental air samples during the work.

1.8.3 Contractor's Responsibility: Work performed by the Owner's Project Monitor shall not relieve the Contractor from providing its own air testing for compliance with all applicable codes, regulations, requirements and as specified in this Section and elsewhere in the Contract Documents.

1.8.4 Cooperation: Contractor will cooperate with Owner's Project Monitor, Owner, and Architect in all aspects of the testing to expedite testing and results.

1.8.5 Access: Contractor will provide Owner's Project Monitor, Owner, and Architect access to the work at all times and in all locations requested as necessary.

1.8.6 Retesting: Contractor will pay for all testing and retesting subsequent to noncompliance with the Contract Documents. Contractor will pay for retesting and resampling by Owner's Project Monitor.

1.8.7 Results: Owner's Project Monitor will perform all testing and analysis promptly and issue results expeditiously in order to minimize any possible delay in the progress of the work.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Plastic Sheeting

Thickness shall be 6-mil or greater, in sizes to minimize the frequency of joints. Use of "spray-on poly" is not permitted.

2.1.2 Tape

Duct tape or other type capable of sealing joints of adjacent sheets of plastic and for attachment of plastic sheet to finished or unfinished surfaces under both dry and wet conditions.

2.1.3 Cleaning Solution

Mixture of at least one ounce of 5 percent TSP to each gallon of HOT water.

2.1.4 Chemicals

Supply applicable Material Safety Data Sheets for all chemicals used in paint removal work. Use the least toxic product as approved by the CIH in the LWP.

2.1.5 Abrasive Materials

Abrasive blasting materials will not be allowed on this project. All removal work shall be by hand to keep the creation of lead dust to a minimum.

2.1.6 Impermeable Containers

Containers shall be suitable to receive and retain lead waste or contaminated materials until disposal at an approved site and labeled in accordance with OSHA Regulation 29 CFR 1926.62 and 49 CFR 173, 178 and 179.

2.1.7 Warning Labels and Signs

As required by OSHA 29 CFR 1926.62.

2.1.8 Other Materials

Provide all other materials, such as lumber, nails and hardware, which may be required to construct and dismantle the decontamination system and the barriers that isolate the work area.

2.2 TOOLS AND EQUIPMENT

2.2.1 Provide suitable tools for lead work.

2.2.2 Transportation

As required for loading, temporary storage, transit, and unloading of contaminated waste without exposure to persons or property. Use only enclosed or covered trucks to haul waste containers to prevent loss or damage of containers in route to the landfill.

2.2.3 Air Purifying Equipment

HEPA Filtration Systems. Verify that no internal air movement system or purification equipment exhausts contaminated air from inside the work area into uncontaminated areas.

2.2.4 Heat Blower Gun Equipment

If utilized, heat blower gun equipment shall be a flameless electrical paint softener type. Heat blower shall have controlled temperature settings to allow usage for temperatures below 1,100 degrees Fahrenheit.

2.2.5 Contained High Pressure Water Wash Equipment

If utilized, high pressure washing equipment shall be equipped with a collection system which captures all water. The water must be contained and treated as potentially hazardous waste.

PART 3 EXECUTION

3.1 CONTRACTOR OPERATIONS

The Contractor will carry out the disturbance of lead paint in accordance with the approved LWP and the requirements of this contract.

3.1.1 Scheduling

The Contractor shall furnish qualified craft personnel in accordance with the Project Manual.

3.1.2 Storage

Coordinate storage and access with General Contractor.

3.1.3 Building Occupancy

The facility will not be occupied during work.

3.1.4 Parking

Contractor shall park in designated areas.

3.1.5 Building Security

Maintain personnel on the site at all times when the work areas are open or not properly secured. Secure work areas completely at the end of each working day.

3.1.6 Correction of Damage to Property

Consider any damage to building or property not identified by the Contractor prior to the start of the work, as having resulted from execution of this Contract and correct at no additional expense to Owner.

3.1.7 Sign In/ Sign Out Log

Maintain a Sign-In/ Sign Out Log in the immediate vicinity of the work. Maintain log from the time the first activity is performed involving the disturbance of lead painted building materials until acceptance of the work area by the Owner and Architect. Require all persons entering the work areas, including the

Contractor's workers, Owner or agents of the Owner to register each time upon entering and leaving work areas. Indicate name, social security number, time, company or agency represented and reason for entering work area.

3.1.8 Utilities

The cost of water and power consumed will be paid by the contractor.

3.1.9 Clean Up

Leave all areas visibly clean at completion of the work.

3.2 WARNING SIGNS AND CAUTION SIGNS

Provide warning signs at approaches to lead control areas. Locate signs at such a distance that personnel may read the sign and avoid the area or take the necessary precautions before entering the area. Provide caution labels and affix labels to lead waste disposal containers.

3.2.1 Warning Sign

29 CFR 1926.62, vertical format minimum 20 by 14 inches spacing between two consecutive lines shall be at least equal to the height of the upper line. Display the following legend:

WARNING
LEAD WORK AREA
POISON
NO SMOKING, EATING OR DRINKING

3.2.2 Caution Signs

At each separate work area, the Contractor performing the work shall display a caution sign in the following manner wherever the treatment process is reasonably expected to break or disturb any lead-containing substances.

CAUTION
LEAD HAZARD
DO NOT ENTER WITHOUT AUTHORIZATION

3.2.3 Prior to Work

Contractor shall post warning signs immediately outside all entrances and exits to the work area except that, in emergency situations, posting shall be done as soon as possible.

3.2.4 Duration

The Contractor shall keep the signs posted until all work is completed and area meets final and are accepted by the Owner's representative.

3.3 LEAD CONTROL AREA REQUIREMENTS

The Contractor shall control access to the lead control area to prevent entry of unprotected and/or unauthorized personnel during work that is expected to produce airborne lead levels above the action level. Work operations and daily cleanup shall be performed to minimize the accumulation of lead dust within the work area. If the quantity of airborne lead monitored at any time is greater than or equal to 30 micrograms per cubic meter of air inside the control area, stop work, correct the condition(s) causing the increase, and

notify the Owner's Project Monitor immediately. Work will not resume until the Owner and Owner's Project Monitor has approved corrective actions. If adjacent areas are contaminated, clean the contaminated areas, monitor, and visually inspect the area as specified herein.

3.4 PERSONNEL PROTECTION

3.4.1 Instruct Workers

Prior to commencement of work, instruct all workers in the appropriate procedures for personnel protection. Insure that workers are knowledgeable in these procedures.

3.4.2 Worker Protection Enforcement

Acknowledge and agree to sole responsibility for enforcing worker protection requirements at least equal to those specified in this Section.

3.4.3 Respiratory Protection Requirements

Provide respiratory protection as required by 29 CFR 1926.62 based on the NIOSH "Respirator Decision Logic" from the time of the first operation until acceptance of final clearance testing inspection. Provide workers with personally issued and marked respiratory equipment approved by NIOSH, OSHA, MSHA and the Department of Health and Human Services. Whenever chemical preparation is used in conjunction with mechanical or powered technique, use additional combination cartridge as necessary.

3.4.4 Replacement Equipment

Where respirators with disposable filters are used, provide sufficient filters for replacement as necessary.

3.4.5 Respirator Upgrading

Use the most current issue of "NIOSH Respirator Decision Logic", NIOSH Pub. No. 87-108, to determine respirator upgrading.

3.4.6 Special Protective Equipment

When using chemical strippers, workers shall use chemically resistant clothing such as neoprene, nitrile, rubber, or PVC gloves, and face shields as mandated by OSHA.

3.4.7 Portable Eyewash Station

Contractor shall provide a portable eyewash station on-site whenever eye-irritating paint removers are used.

3.4.8 Post

Provide and post in an appropriately designated common area the lead decontamination and work procedures to be followed by workers and the OSHA worker protection poster.

3.5 PREPARATION

Coordinate sequence of work area preparation throughout the building with other trades to properly segregate work areas from areas in which other construction is being performed.

3.5.1 Initial Preparation of Work Area.

Perform disturbance of lead painted surfaces in accordance with the approved LWP. Personnel of other trades not engaged in the disturbance of lead painted surfaces or building components shall not be exposed at any time to airborne concentrations of lead above the action level. No onsite removal is to be expected. Painted materials shall be demolished in place and appropriate TCLP sampling performed. If contractor conducts onsite stripping it shall be performed as outlined in the following paragraphs:

3.5.2 Removal and/or Disturbance of Lead Paint

Remove and properly dispose of waste in accordance with the methods and procedures outlined in 29 CFR 1926.62, 49 CFR 171-179, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 61, and the LWP. Removal and disturbance of lead surfaces or lead painted building components should be done in a manner to limit the amount of lead dust created. At the end of each work day, time will be set aside for daily cleanup. Daily clean up shall be performed as outlined in the approved LWP. After lead work is completed clean all surfaces in the work area.

3.5.2.1 On-site Paint Removal

When using chemical strippers, utilize equipment and procedures as required by the manufacturer's recommendations. Material Safety Data Sheets provided by the manufacturer shall be readily available to all personnel handling the chemical stripper. As required under OSHA regulations, chemically resistant clothing such as long, neoprene, nitrile, rubber, or PVC gloves, face shields and appropriate respiratory protection shall be used when handling chemical strippers. Additionally a portable eyewash station is required for flushing chemicals from eyes and skin.

3.5.2.2 Chemical Paint Removers Containing Methylene Chloride

If utilized, chemical paint removers shall contain no methylene chloride products.

3.5.2.3 Chemical Stripping Remover

If utilized, chemical removers shall be compatible with, and not harmful to the substrate that they are applied to. Chemical removers used on masonry surfaces shall contain anti-stain formulation that inhibits discoloration of stone, granite, brick and other masonry construction. Chemical removers used on interior surfaces shall not raise or discolor the surface being abated.

3.5.2.4 Chemical Stripping Agent Neutralizer

If utilized, chemical stripping agent neutralizer may be used on exterior surfaces only. Neutralizers shall be compatible with and not harmful to the substrate that they are applied to. Neutralizers shall be compatible with the stripping agent that has been applied to the surface substrate.

3.5.2.5 Heat Guns

The use of open flame burning is prohibited. If utilized, heat removal methods are limited to electrical powered flameless heat guns with temperature setting controls to below 1,100 degrees Fahrenheit. Utilize procedures as required by the manufacturer's recommendations and as specified in the LWP.

3.5.2.6 HEPA Sanding

If utilized, HEPA sanders shall be equipped with specially designed shrouds or containment systems that are placed under a partial vacuum. All exhaust air must pass through a HEPA filter to reduce the amount of airborne particulate lead. Utilize procedures as required by the manufacturer's recommendations and as specified in the LWP.

3.5.2.7 Wet Scrapping

Dry scraping is appropriate only at surfaces near electrical outlets or when using a heat gun. Otherwise manual scrapping shall be performed utilizing wet scraping methods. Prepare lead work areas as specified in the LWP. Wet scraping can be performed by using a spray bottle or sponge attached to a paint scraper. Work a few square feet at a time, the surface should be lightly misted with water from a garden sprayer or plant mister. Damp paint chips should be cleaned up as soon as possible so that they are not tracked throughout the work area or crushed beneath the feet of workers.

3.5.2.8 Contained High Pressure Water Wash

Uncontained high pressure watering is prohibited. If high pressure washing equipment is utilized, it shall be equipped with a collection system which captures all water. The water must be contained and treated as potentially hazardous waste. Utilize procedures as required by the manufacture's recommendations and as specified in the LWP.

3.5.3 Decontamination

Workers are required to perform personnel and equipment decontamination in accordance with the approved LWP.

3.5.4 Monitoring Results

- A. Sampling shall be conducted in accordance with 29 CFR 1926.62, this specification, and the approved LWP.
- B. The Owner's Project Monitor shall collect area air sampling and perform inspection of the work to ensure that the requirements of the contract have been satisfied during the lead work.
- C. Collect personal air samples on employees who are anticipated to have the greatest risk of exposure. In addition, collect air samples on at least twenty-five percent of the work crew or a minimum of two employees, whichever is greater, during each work shift.
- D. The Contractor's personal air sample results shall be submitted within 48 hours after the air samples are taken. Notify the Owner or Owner's Representative immediately of exposure to lead at or in excess of the action level of 30 micrograms per cubic meter.

3.5 SITE INSPECTION

While performing lead work, the Contractor shall be subject to on-site inspection by the Owner's Project Monitor and Owner's Representative. If the work is in violation of specification requirements, the Owner will issue a stop work order to be in effect immediately and until the violation is resolved. Standby time and expenses required to resolve the violation shall be at the Contractor's expense.

3.6 CLEANUP AND WORK SITE RELEASE

3.6.1 Cleanup of Work Area and Clearance Testing

Maintain surfaces of the lead control area free of accumulations of dust and debris. Restrict the spread of dust and debris; keep waste from being distributed over the work area. Do not dry sweep or use pressurized air to clean up the area.

3.6.2 TCLP Testing Requirements

Representative samples of all debris to be disposed of shall be tested in accordance with 40 CFR 261 for hazardous waste. It shall be unlawful for materials identified as toxic waste to be disposed of with ordinary construction debris.

3.7 DISPOSAL

Handle, store, transport, and dispose of debris in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265. Comply with land disposal restriction notification requirements as required by 40 CFR 268. Disposal of debris shall be performed in accordance with all local, state and federal regulations.

- END OF SECTION -

**APPLIED
LABORATORY
SERVICES**

**HANDLING OF PCB BALLASTS,
MERCURY LAMPS AND THERMOSTATS
SPECIFICATION**

**MEADOWBROOKE ELEMENTARY SCHOOL
7620 SHIRLAND AVENUE
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HANDLING OF PCB BALLASTS, MERCURY LAMPS AND THERMOSTATS

PART 1 - GENERAL

- 1.1 REFERENCES The publications listed below form a part of this specification to the extent referenced.
The publications are referred to within the text by the basic designation only.

CODE OF FEDERAL REGULATIONS

29 CFR 1910.1000	Air Contaminants
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 273	Standards for Universal Waste Management
49 CFR 172	Hazardous Materials, Table, and Hazardous Materials Communications Regulations
49 CFR 178	Shipping Container Specification

VIRGINIA ADMINISTRATIVE CODE (VAC)

9 VAC 20-60	Hazardous Waste Regulations
9 VAC 20-80	Solid Waste Management Regulations

1.2 SCOPE

Removal and proper disposal of 517 PCB containing lighting ballasts, 976 associated mercury-containing lamps and 28 Mercury Containing Thermostats. Contractor is cautioned leaking PCB ballasts may exist.

1.3 DEFINITIONS

- A. Certified Industrial Hygienist (CIH) - An industrial hygienist hired by the contractor shall be certified by the American Board of Industrial Hygiene.
- B. Lamp - Also referred to as "universal waste lamp", is defined as the bulb or tube portion of an electric lighting device. A lamp is specifically designed to produce radiant energy, most often in the ultraviolet, visible, and infrared regions of the electromagnetic spectrum. Examples of common universal waste electric lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps.
- C. Leak - Leak or leaking means any instance in which a PCB article, PCB container, or PCB equipment has any PCBs on any portion of its external surface.
- D. Polychlorinated Biphenyls (PCBs) - PCBs as used in this specification shall mean the same as PCBs, PCB containing lighting ballast, and PCB container, as defined in 40 CFR 761, Section 3, Definitions.
- E. Spill - Spill means both intentional and unintentional spills, leaks, and other uncontrolled discharges when the release results in any quantity of PCBs running off or about to run off the external surface of the equipment or other PCB source, as well as the contamination resulting from those releases.
- F. Universal Waste- Universal Waste means any of the following hazardous wastes that are managed under the universal waste requirements 40 CFR 273: (1) Batteries as described in Sec. 273.2 of this chapter; (2) Pesticides as described in Sec. 273.3 of this chapter; (3) Thermostats as described in Sec. 273.4 of this chapter; and (4) Lamps as described in Sec. 273.5 of this chapter.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements - Perform PCB related work in accordance with 40 CFR 761, 9 VAC 20-60 and 9 VAC 20-80. Perform mercury-containing lamps storage and transport in accordance with 40 CFR 262, 40 CFR 263, 9 VAC 20-60 and 9 VAC 20-80.
- B. Training - All persons involved in the removal of PCB containing lighting ballasts and mercury-containing lamps shall be properly trained. The instruction shall include: The dangers of PCB and mercury exposure, decontamination, safe work practices, and applicable OSHA and EPA regulations. The contractors CIH shall review and approve the PCB and Mercury-Containing Lamp Removal Work Plans.
- C. Regulation Documents - Maintain at all times one copy each at the office and one copy each in view at the job site of 29 CFR 1910.1000, 40 CFR 761, 40 CFR 262, 40 CFR 263, 9 VAC 20-60, 9 VAC 20-80 and the Contractor removal work plan and disposal plan for PCB and for associated mercury-containing lamps.

1.5 SUBMITTALS - Submit the following in accordance with "Submittal Procedures."

- A. Qualifications of CIH - Submit the name, address, and telephone number of the Industrial Hygienist selected to perform the duties in paragraph entitled "Certified Industrial Hygienist." Submit training certification that the Industrial Hygienist is certified, including certification number and date of certification or re certification.
- B. PCB and Mercury-Containing Lamp Removal Work Plan - Submit a job-specific plan of the work procedures to be used in the removal, packaging, and storage of PCB-containing lighting ballasts and associated mercury-containing lamps. Include in the plan: Requirements for Personal Protective Equipment (PPE), spill cleanup procedures and equipment, eating, smoking and restroom procedures. Obtain approval of the plan by the Owner and/or the owner's representative prior to the start of PCB and/or lamp removal work.
- C. PCB and Mercury-Containing Lamp Disposal Plan - Submit a PCB and mercury containing lamp Disposal Plan. The PCB and Mercury-Containing Lamp Disposal Plan shall comply with applicable requirements of federal, state, and local PCB and RCRA waste regulations and address:
 - 1. Estimated quantities of wastes to be generated, disposed of, and recycled.
 - 2. Names and qualifications of each Contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location. Furnish two copies of EPA and state PCB and mercury-containing lamp waste permit applications and EPA identification numbers.
 - 3. Names and qualifications (experience and training) of personnel who will be working on-site with PCB and mercury-containing lamp wastes.
 - 4. Spill prevention, containment, and cleanup contingency measures to be implemented.
 - 5. Work plan and schedule for PCB and mercury-containing lamp waste removal, containment, storage, transportation, disposal and or recycling. Wastes shall be cleaned up and containerize daily.
- D. Certificate of Disposal and/or recycling - Submit to the Owner before application for payment within 30 days of the date that the disposal of the PCB and mercury-containing lamp waste identified on the manifest was completed.

- 1.6 SPECIAL CLOTHING
 - a. Disposable gloves
 - b. Eye protection
 - c. PPE as required by CIH

1.7 SCHEDULING

Notify the Owner 5 days prior to the start of PCB and mercury-containing lamp removal work.

PART 2 NOT USED

PART 3 EXECUTION

- 3.1 WORK PROCEDURE - Furnish labor, materials, services, and equipment necessary for the removal of PCB containing lighting ballasts, associated mercury-containing fluorescent lamps, and high intensity discharge (HID) lamps in accordance with local, state, or federal regulations. Do not expose PCBs to open flames or other high temperature sources since toxic decomposition by-products may be produced. Do not break mercury containing fluorescent lamps or high intensity discharge lamps

- A. Work Operations - Ensure that work operations or processes involving PCB or PCB-contaminated materials are conducted in accordance with 40 CFR 761, 40 CFR 262 40 CFR 263, and the applicable requirements of this section, including but not limited to:
 - 1. Obtaining suitable PCB and mercury-containing lamp storage sites.
 - 2. Notifying Owner and/or Owner's representative prior to commencing the operation.
 - 3. Reporting leaks and spills to the Owner and/or Owner's representative.
 - 4. Spill clean up.
 - 5. Inspecting PCB and PCB-contaminated items and waste containers for leaks and forwarding copies of inspection reports to the Owner and/or Owner's representative.
 - 6. Maintaining inspection, inventory and spill records.

3.2 PCB SPILL CLEANUP REQUIREMENTS

- A. PCB Spills - Immediately report to the Owner and/or Owner's representative any PCB spills.
- B. PCB Spill Control Area - Rope off an area around the edges of a PCB leak or spill and post a "PCB Spill Authorized Personnel Only" caution sign. Immediately transfer leaking items to a drip pan or other container.
- C. PCB Spill Cleanup - 40 CFR 761, subpart G. Initiate cleanup of spills as soon as possible, but no later than 24 hours of its discovery. Mop up the liquid with rags or other conventional absorbent. The spent absorbent shall be properly contained and disposed of as solid PCB waste.
- D. Records and Certification - Document the cleanup with records of decontamination in accordance with 40 CFR 761, Section 125, Requirements for PCB Spill Cleanup. Provide test results of cleanup and certification of decontamination.

3.3 REMOVAL

- A. Ballasts - As ballast are removed from the lighting fixture, inspect label on ballast. Ballasts without markings shall be assumed to contain PCBs and containerized and disposed of as required under paragraphs STORAGE FOR DISPOSAL and DISPOSAL. If there are less than 1600 unmarked lighting ballasts dispose of them as normal demolition debris. If there are more than 1600 unmarked ballasts, establish whether the ballasts contain diethylhexyl phthalate (DEHP) either by test or by checking with the ballast

**HANDLING OF PCB BALLASTS,
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manufacturer indicated on the label. Submit testing results and/or written confirmation from the manufacturer to the Owner and Architect. If the ballasts do not contain DEHP, dispose of them as normal construction debris. If they do contain DEHP, dispose of them as hazardous material in accordance with Federal, State, and local regulations. Do not drop, throw, or crush ballasts, or strike with a tool. Carefully place ballasts when moving. Do not stack ballasts more than 30" high.

- B. Lighting Lamps - Remove lighting tubes/lamps from the lighting fixture and carefully place (unbroken) into appropriate containers (original transport boxes or equivalent). In the event of a lighting tube/lamp breaking, sweep and place waste in double plastic taped bags and dispose of as universal waste as specified herein. Clean up equipment will be dedicated for broken lighting tube/lamps only, and so marked. Notify Owner immediately of all lighting tube/lamp breakage.
- C. Thermostats - Remove thermostats from the wall mount utilizing hand tools and carefully place (unbroken) into appropriate containers. Notify Owner and/or Owner's representative immediately of all thermostats leaking or broken.

3.4 STORAGE FOR DISPOSAL

- A. Storage Containers for PCBs 49 CFR 178. - Store PCB in containers approved by DOT for PCB.
- B. Storage Containers for lamps - Store mercury containing lamps and thermostats in appropriate DOT containers. The boxes shall be stored and labeled for transport in accordance with 40 CFR 262, 40 CFR 263, 9 VAC 20-60 and 9 VAC 20-80.
- C. Labeling of Waste Containers - Label with the following:
 - 1. Date the item was placed in storage and the name of the Owner.
 - 2. "Caution Contains PCB," conforming to 40 CFR 761, CFR Subpart C. Affix labels to PCB waste containers
 - 3. Label mercury-containing waste in accordance with 49 CFR 172, 40 CFR 262, and 40 CFR 263. Affix labels to all lighting waste containers.

3.5 DISPOSAL - Dispose of off Owner property in accordance with EPA, DOT, and local regulations at a permitted site.

- A. Identification Number - Federal regulations 40 CFR 761, and 40 CFR 263 require that generators, transporters, commercial storers, and disposers of PCB waste possess U.S. EPA identification numbers. The contractor shall verify that the activity has a U.S. EPA generator identification number for use on the Uniform Hazardous Waste manifest. If not, the contractor shall advise the activity that it must file and obtain an I.D. number with EPA prior to commencement of removal work. For mercury containing lamp removal, Federal regulations 40 CFR 273 require that Large Quantity Handlers of Universal Waste (LQHUW) must provide notification of universal waste management to the appropriate EPA Region (or state director in authorized states), obtain an EPA identification number, and retain for three years records of off-site shipments of universal waste. The contractor shall verify that the activity has a U.S. EPA generator identification number for use on the Universal Waste manifest. If not, the contractor shall advise the activity that it must file and obtain an I.D. number with EPA prior to commencement of removal work.
- B. Transporter Certification - Comply with disposal and transportation requirements outlined in 40 CFR 761 and 40 CFR 263. Before transporting the PCB and lamp waste, sign and date the manifest acknowledging acceptance of the PCB and mercury-containing waste from the Owner. Return a signed copy to the Owner before leaving the job site. Ensure that the manifest accompanies the PCB and lamp waste at all times. Submit transporter certification of notification to EPA of their PCB and lamp waste activities (EPA Form 7710-53).

1. Certificate of Disposal and/or Recycling 40 CFR 761. Certificate for the PCBs and PCB items, and lamps disposed shall include:
 - a. The identity of the disposal and or recycling facility, by name, address, and EPA identification number.
 - b. The identity of the PCB and lamp waste affected by the Certificate of Disposal including reference to the manifest number for the shipment.
 - c. A statement certifying the fact of disposal and or recycling of the identified PCB and/or lamp waste, including the date(s) of disposal, and identifying the disposal process used.
 - d. A certification as defined in 40 CFR 761.

- END OF SECTION -